

Contract Documents and Technical Specifications

Dresden Street Water and Sewer
Replacement and Street Improvements

Kalkaska, MI

Owner:

Village of Kalkaska

200 Hyde Street

Kalkaska , MI 49646

Engineer:

Gosling Czubak Engineering Sciences, Inc.

1280 Business Park Drive

Traverse City, Michigan

(231) 946-9191

www.goslingczubak.com

February 23, 2026

Job#: 2022222002



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*Must be submitted with BID

ADVERTISEMENT FOR BIDS

Village of Kalkaska
Kalkaska, MI

Dresden Street Water and Sewer Replacement and Street Improvements

General Notice

Village of Kalkaska (Owner) is requesting Bids for the construction of the following Project:

Dresden Street Water and Sewer Replacement and Street Improvements
2022222002

Bids for the construction of the Project will be received at the office of the Village of Kalkaska located at 200 Hyde Street, Kalkaska, MI 49646, until Friday, March 20th, 2026 at 10 am local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

Installation of 1,132 LF of 8-inch water main valves, services, connection to existing main and abandonment of existing water.

Installation of 742 LF of 8-inch gravity sanitary sewer, manholes, services, connection to existing main and abandonment of existing sewer.

Installation of 2,670 LF of 22-foot wide asphalt pavement and subbase.

Crushing and shaping approximately 10,260 syd of roadway.

Placing approximately 1,540 tons of HMA mixture.

Bids are requested for the following Contract: Dresden Street Water and Sewer Replacement and Street Improvements.

Obtaining the Bidding Documents

The Issuing Office for the Bidding Documents is:

Gosling Czubak Engineering Sciences, Inc.
1280 Business Park Drive, Traverse City, Michigan 49686
(231) 946-9191

Prospective Bidders may view the bidding documents by downloading from the issuing website.
<https://www.goslingczubak.com/project-bidding/>.

Printed copies of the Bidding Documents will not be issued from the bidding office.

Bidding Documents are free for download from the issuing office or the website for the Builders Exchange of Northwest Michigan.

Register for bid with Tim Korson by email at tnkorson@goslingczubak.com. Failure to do so may result in not receiving notification of Addendum postings.

Pre-bid Conference

A mandatory pre-bid conference for the Project will be held on Friday, March 6th, 2026 at 10 am at Village of Kalkaska Offices, 200 Hyde Street, Kalkaska, Michigan 49646. Bids will not be accepted from Bidders that do not attend the mandatory pre-bid conference.

Instructions to Bidders.

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: Village of Kalkaska

By: Aaron Popa

Title: Village Manager

Date: February 23, 2026

+ + END OF ADVERTISEMENT FOR BIDS + +

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.

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 Bidder's are to register with Tim Korson by email at tnkorson@goslingczubak.com 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.
- 2.04 *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 Version. 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 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within seven days of Owner's request, Bidder must submit the following information:
- A. AGC's "Construction Contractor's Qualification Statement for Engineered Construction," AGC Document No. 220 or "Contractor's Statement of Qualifications for a Specific Project," AGC Document No. 221.
 - B. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - C. 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.
 - D. Bidder's state or other contractor license number, if applicable.
 - E. Subcontractor and Supplier qualification information.
 - F. Other required information regarding qualifications.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Proposals will not be accepted from Bidders who do not attend the conference. It is each Bidder's responsibility to sign in at the pre-bid conference to verify its participation. Bidders must sign in using the name of the organization that will be submitting a Bid. A list of qualified Bidders that attended the pre-bid conference and are eligible to submit a Bid for this Project will be issued in an Addendum.
- 4.02 Information presented at the pre-bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

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.

- 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 *Site Visit and Testing by Bidders*

- A. Bidders are encouraged 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. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. 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.
- D. 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.

5.04 *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.

5.05 *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. Contact Name: Tim Korson
Email: tnkorson@goslingczubak.com
Direct Phone: (231) 933-5113

- 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 five 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.
- 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 seven 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 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 The Contract for the Work, if 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 at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days in the case of a proposed "or-equal." 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. 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 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

- 10.02 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.
- 10.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 If required by the bidding documents, The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:

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.

- 11.02 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.

- 11.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 11.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

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 seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary. The corporate address and state of incorporation must be shown.
- 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 *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.

13.02 *Allowances*

- A. For cash allowances the Bid price must include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

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.

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 reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 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.

- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *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. 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.
- 18.06 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.
- 18.07 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 exempt from Michigan state sales and use taxes on materials and equipment to be incorporated in the Work. (Exemption No. [number]). Said taxes must not be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

ARTICLE 22—CONTRACTS TO BE ASSIGNED

ARTICLE 23—WAGE RATE REQUIREMENTS

23.01 If the contract price is in excess of \$100,000, provisions of the Contract Work Hours and Safety Standards Act at 29 CFR 5.5(b) apply.

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:

*Village of Kalkaska
200 Hyde Street
Kalkaska, MI 49646*

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. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. List of Project References;
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
- F. 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;
- G. Affidavit for Non-Collusion; and
- H. Bid Schedule and Material and Equipment Selection Lists.

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 unit prices indicated in the bid schedule following this section.
- 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.

3.02 *Total Bid Price (Lump Sum and Unit Prices)*

Total Bid Price (Total of all Lump Sum and Unit Price Bids)	\$
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ARTICLE 4—TIME OF COMPLETION

- 4.01 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.
- 4.02 Bidder agrees that the Work will be substantially complete on or before August 14th, 2026, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before August 28th, 2026.
- 4.03 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 70 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *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.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *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.
 - 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.

6.02 *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) _____

I. BASE BID - DRESDEN STREET WATER AND SEWER REPLACEMENT AND STREET IMPROVEMENTS						
Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Estimate	Amount
1	Mobilization	1	LS	\$	-	\$ -
2	Audio Visual Route Survey	1	LS	\$	-	\$ -
3	Traffic Control	1	LS	\$	-	\$ -
4	Soil Erosion and Sediment Control	1	LS	\$	-	\$ -
5	Crush and Shape HMA Pavement and Base	10,260	SYD	\$	-	\$ -
6	Concrete, Rem	235	SYD	\$	-	\$ -
7	Grading	1	LS	\$	-	\$ -
8	Adjust Drainage Structure	1	EA	\$	-	\$ -
9	Water Main, PVC, 8 inch	1,138	LF	\$	-	\$ -
10	Water Main, PVC, 6 inch	55	LF	\$	-	\$ -
11	Gate Valve, 8 inch	6	EA	\$	-	\$ -
12	Copper Service, 1 inch	6	EA	\$	-	\$ -
13	Hydrant Assembly, 6 inch	3	EA	\$	-	\$ -
14	Hydrant Assembly, Salvage	2	EA	\$	-	\$ -
15	Water Main connect, cut and cap, and abandon	4	EA	\$	-	\$ -
16	Sanitary Sewer Bypass Pumping	1	LS	\$	-	\$ -
17	Structure, 48 inch dia	4	EA	\$	-	\$ -
18	Sanitary, PVC, 8 inch	725	LF	\$	-	\$ -
19	Sewer Service, PVC, 6 inch	6	EA	\$	-	\$ -
20	Sanitary Sewer Removal	37	LF	\$	-	\$ -
21	Sanitary Sewer Structure Abandonment	2	EA	\$	-	\$ -
22	Sanitary Sewer Connect to Existing System	2	EA	\$	-	\$ -
23	HMA, 4EL	1,560	TON	\$	-	\$ -
24	Driveway, CL II, 3 inch	20	TON	\$	-	\$ -
25	Shoulder, CL II, 3 inch	275	TON	\$	-	\$ -
26	Sidewalk, Conc, 6 inch	955	SFT	\$	-	\$ -
27	Driveway, Conc, 6 inch	835	SFT	\$	-	\$ -
28	ADA Tactile Strip	20	LF	\$	-	\$ -
29	Restoration	1	LS	\$	-	\$ -
Total Project Cost					\$	-

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: Village of Kalkaska Address (<i>principal place of business</i>): Village of Kalkaska Offices 200 Hyde Street Kalkaska, MI 49646	Bid Project (<i>name and location</i>): Dresden Street Water and Sewer Replacement and Street Improvements Bid Due Date: Friday, March 20 th , 2026
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 _____ (<i>Full formal name of Bidder</i>)	Surety _____ (<i>Full formal name of Surety</i>) (<i>corporate seal</i>)
By: _____ (<i>Signature</i>)	By: _____ (<i>Signature</i>) (<i>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: _____
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.	

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.

NON-COLLUSIVE AFFIDAVIT

The Undersigned, _____

being _____ and duly authorized so to act,

being duly sworn, deposes and says that _____

is the contractor submitting this bid, and that its agents, officers, or employees have not directly or indirectly entered into any agreements, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal for the above project.

Name

Title

Taken, subscribed and sworn before me this _____ day of _____

(Notary's Signature)

Notary Public in and for

County

My Commission Expires:

NOTICE OF AWARD

Date of Issuance:

Owner: Village of Kalkaska Owner's Project No.:
Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2022222002
Project: Village of Kalkaska Dresden Street Rehabilitation
Contract Name: Dresden Street Water and Sewer Replacement and Street Improvements
Bidder:
Bidder's Address:

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

Installation of 1,132 LF of 8-inch water main valves, services, connection to existing main and abandonment of existing water.

Installation of 742 LF of 8-inch gravity sanitary sewer, manholes, services, connection to existing main and abandonment of existing sewer.

Installation of 2,670 LF of 22-foot wide asphalt pavement and sub base.

Crushing and shaping approximately 10,260 syd of roadway.

Placing approximately 1,540 tons of HMA mixture.

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.

Three 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 an electronic copy of 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): Bonds are not to be dated until after the contract is signed and dated by the Owner.

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: Village of Kalkaska

By (*signature*): _____

Name (*printed*): Aaron Popa _____

Title: Village Manager _____

Copy: Engineer

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

This Agreement is by and between Village of Kalkaska (“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:

Installation of 1,132 LF of 8-inch water main valves, services, connection to existing main and abandonment of existing water.

Installation of 742 LF of 8-inch gravity sanitary sewer, manholes, services, connection to existing main and abandonment of existing sewer.

Installation of 2,670 LF of 22-foot wide asphalt pavement and subbase.

Crushing and shaping approximately 10,260 syd of roadway.

Placing approximately 1,540 tons of HMA mixture.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Dresden Street Water and Sewer Replacement and Street Improvements

ARTICLE 3—ENGINEER

3.01 The Owner has retained Gosling Czubak Engineering Sciences, Inc. (“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 Gosling Czubak Engineering Sciences, Inc.

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 August 14th, 2026, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before August 28th, 2026.

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 \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 - 2. *Completion of Remaining Work*: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500 for each day that expires after such time until the Work is completed and ready for final payment.
 - 4. 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.

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

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

- A. For all 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).

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.

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

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 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 25th 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. 90% percent of the value of the Work completed (with the balance being retainage).

- B. Upon Substantial Completion, 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 maximum legal rate.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual (copy of list attached).
 - 6. Drawings (not attached but incorporated by reference) consisting of 9 sheets with each sheet bearing the following general title: Dresden Street Water and Sewer Replacement & Street Improvements
 - 7. Drawings listed on the attached sheet index.
 - 8. Addenda (numbers ? to ?, inclusive).
 - 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 1 to 1, inclusive).
 - 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.
- 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: Village of Kalkaska

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: _____

NOTICE TO PROCEED

Owner: Village of Kalkaska Owner's Project No.: _____
Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2022222002
Contractor: _____ Contractor's Project No.: _____
Project: Dresden Street – Water, Sewer, and Street Improvements
Contract Name: Dresden Street Water and Sewer Replacement and Street Improvements
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:

The date by which Substantial Completion must be achieved is August 14th, 2026, and the date by which readiness for final payment must be achieved is August 28th, 2026.

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

1. Submit and have approved a video survey of existing conditions
2. Submit and have approved shop drawings
3. Complete Pre-Construction Meeting
4. Road closures and site work to begin no earlier than June 15, 2026 unless otherwise notified.

Owner: Village of Kalkaska
By (signature): _____
Name (printed): Aaron Popa
Title: Village Manager
Date Issued: _____

Copy: Engineer

PERFORMANCE BOND

<p>Contractor Name: [Full formal name of Contractor] Address (<i>principal place of business</i>): [Address of Contractor's principal place of business]</p>	<p>Surety Name: [Full formal name of Surety] Address (<i>principal place of business</i>): [Address of Surety's principal place of business]</p>
<p>Owner Name: Village of Kalkaska Mailing address (<i>principal place of business</i>): Village of Kalkaska Offices 200 Hyde Street Kalkaska, MI 49646</p>	<p>Contract Description (<i>name and location</i>): Dresden Street Water and Sewer Replacement and Street Improvements Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]</p>
<p>Bond Bond Amount: [Amount] Date of Bond: [Date] (<i>Date of Bond cannot be earlier than Effective Date of Contract</i>) Modifications to this Bond form: <input checked="" 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>	
<p>Contractor as Principal</p>	<p>Surety</p>
<p>_____ (<i>Full formal name of Contractor</i>)</p>	<p>_____ (<i>Full formal name of Surety</i>) (<i>corporate seal</i>)</p>
<p>By: _____ (<i>Signature</i>)</p>	<p>By: _____ (<i>Signature</i>)(<i>Attach Power of Attorney</i>)</p>
<p>Name: _____ (<i>Printed or typed</i>)</p>	<p>Name: _____ (<i>Printed or typed</i>)</p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____ (<i>Signature</i>)</p>	<p>Attest: _____ (<i>Signature</i>)</p>
<p>Name: _____ (<i>Printed or typed</i>)</p>	<p>Name: _____ (<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: None

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor'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: Village of Kalkaska Mailing address <i>(principal place of business)</i> : Village of Kalkaska Office 200 Hyde Street Kalkaska, MI 49646	Contract Description <i>(name and location)</i> : Dresden Street Water and Sewer Replacement and Street Improvements Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input checked="" type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
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.	
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: _____
<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>	

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: None

Contractor's Application for Payment

Owner: <u>Village of Kalkaska</u>	Owner's Project No.: _____
Engineer: <u>Gosling Czubak Engineering Czubak, Inc.</u>	Engineer's Project No.: <u>2022222002</u>
Contractor: _____	Contractor's Project No.: _____
Project: <u>Dresden Street Water and Sewer Replacement and Street Improvements</u>	
Contract: <u>Dresden Street Water and Sewer Replacement and Street Improvements</u>	
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: _____

<p>Recommended by Engineer</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p> <p>Approved by Funding Agency</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>	<p>Approved by Owner</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p>
--	---

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner:	Village of Kalkaska	Owner's Project No.:	
Engineer:	Gosling Czubak Engineering Czubak, Inc.	Engineer's Project No.:	202222002
Contractor:		Contractor's Project No.:	
Project:	Dresden Street Water and Sewer Replacement and Street Improvements		
Contract:	Dresden Street Water and Sewer Replacement and Street Improvements		

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

A	B	C	D E		F	G	H	I
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials Currently Stored (not in D or E) (\$)	Work Completed and Materials Stored to Date (D + E + F) (\$)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) (\$)
			(D + E) From Previous Application (\$)	This Period (\$)				
Change Orders								
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Change Order Totals	\$ -	\$ -	\$ -	\$ -	\$ -		\$ -
Original Contract and Change Orders								
	Project Totals	\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:	Village of Kalkaska	Owner's Project No.:	
Engineer:	Gosling Czubak Engineering Czubak, Inc.	Engineer's Project No.:	2022222002
Contractor:		Contractor's Project No.:	
Project:	Dresden Street Water and Sewer Replacement and Street Improvements		
Contract:	Dresden Street Water and Sewer Replacement and Street Improvements		

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												
1					-		-		-		-	
2					-		-		-		-	
3					-		-		-		-	
4					-		-		-		-	
5					-		-		-		-	
6					-		-		-		-	
7					-		-		-		-	
8					-		-		-		-	
9					-		-		-		-	
10					-		-		-		-	
11					-		-		-		-	
12					-		-		-		-	
13					-		-		-		-	
14					-		-		-		-	
15					-		-		-		-	
16					-		-		-		-	
17					-		-		-		-	
18					-		-		-		-	
19					-		-		-		-	
20					-		-		-		-	
Original Contract Totals					\$	-	\$	-	\$	-	\$	-

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Village of Kalkaska
Engineer: Gosling Czubak Engineering Sciences, Inc.
Contractor: Village of Kalkaska Dresden Street Rehabilitation
Project: Village of Kalkaska Dresden Street Rehabilitation
Contract Name: _____

Owner's Project No.: _____
Engineer's Project No.: 2022222002
Contractor's Project No.: _____

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: August 14th, 2026

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: _____

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

Not used.

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 zero 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 zero 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 24 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.

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

4.05 *Delays in Contractor’s Progress*

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

5. *Weather-Related Delays*

- a. If “abnormal weather conditions” as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.

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

Not used.

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.

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

3. For the following Subcontractors, Suppliers, or categories of Subcontractor or Supplier, Contractor shall require the following specified insurance, with policy limits as stated: [Identify Subcontractors, Suppliers, or categories of same, and insert specific insurance requirements and policy limits]

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:

- 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
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$
Bodily injury by disease—aggregate	\$
Employer's Liability	
Each accident	\$ 500,000
Each employee	\$
Policy limit	\$
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	\$ 2,000,000
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:
Bodily Injury	
Each Person	\$ 1,000,000
Each Accident	\$ 1,000,000
Property Damage	
Each Accident	\$ 1,000,000
[or]	
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	\$ 5,000,000
General Aggregate	\$ 5,000,000

- 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 \$0 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	\$
General Aggregate	\$

- 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	\$
Annual Aggregate	\$

- 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	\$
Aggregate	\$

- 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	\$
General Aggregate	\$

- Q. *Other Required Insurance*

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Delete Paragraph 6.04.A and insert the following in its place:

- A. Owner 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.

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 7 AM to 6 PM.
2. Owner's legal holidays during the project schedule are Memorial Day, 4th of July, Labor Day.

SC-7.03 Amend the first and second sentences of Paragraph 7.03.C to state "...all Work at the Site must be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday."

SC-7.03 Delete Paragraph 7.03.C in its entirety, and insert the following:

- C. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

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

- D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.03 Add the following new subparagraph immediately after Paragraph SC-7.03.D:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as Work on a Saturday, Sunday, or any legal holiday.

7.10 *Taxes*

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

- A. Owner is exempt from payment of sales and compensating use taxes of the State of Michigan and of cities and counties thereof on all materials to be incorporated into the Work.
 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

7.13 *Safety and Protection*

ARTICLE 8—OTHER WORK AT THE SITE

Not used.

ARTICLE 9—OWNER’S RESPONSIBILITIES

Not used.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new subparagraph immediately after Paragraph 10.03.A:

1. On this Project, by agreement with the Owner, the Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.

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.

ARTICLE 12—CLAIMS

No suggested Supplementary Conditions in this Article.

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

Not used.

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

Not used.

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

15.03 *Substantial Completion*

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.

17.03 *Attorneys' Fees*

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02. [Note: If there is no Paragraph 17.02, because neither arbitration nor any other dispute resolution process has been specified here in the Supplementary Conditions, then revise this to state "Add the following new Paragraph immediately after Paragraph 17.01" and revise the numbering accordingly].

17.03 *Attorneys' Fees*

- A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18—MISCELLANEOUS

Not used.

ARTICLE 19—FEDERAL REQUIREMENTS

Not used.

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

Owner: Village of Kalkaska
Engineer: Gosling Czubak Engineering Sciences, Inc.
Contractor: Dresden Street - Water and Sewer Replacement and Street Improvements
Project: Dresden Street - Water and Sewer Replacement and Street Improvements
Contract Name: Dresden Street - Water and Sewer Replacement and Street Improvements
Date Issued: Effective Date of Work Change Directive:

Owner's Project No.:
Engineer's Project No.: 2022222002
Contractor's Project No.:

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:

CHANGE ORDER NO.: [Number of Change Order]

Owner: Village of Kalkaska
 Engineer: Gosling Czubak Engineering Sciences, Inc.
 Contractor:
 Project: Dresden Street - Water and Sewer Replacement and Street Improvements
 Contract Name: Dresden Street - Water and Sewer Replacement and Street Improvements
 Date Issued: Effective Date of Change Order:

Owner's Project No.:
 Engineer's Project No.: 2022222002
 Contractor's Project No.:

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: _____	_____

**VILLAGE OF KALKASKA
MASTER TECHNICAL SPECIFICATIONS
2021
Supersedes All Previously Approved
Specifications
(Excludes Division 11)**

TECHNICAL SPECIFICATIONS
FOR SANITARY SEWER AND
WATER MAIN CONSTRUCTION IN THE
VILLAGE OF KALKASKA, KALKASKA COUNTY

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SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

Work will include:

Installation of 1,132 LF of 8-inch water main valves, services, connection to existing main and abandonment of existing water.

Installation of 742 LF of 8-inch gravity sanitary sewer, manholes, services, connection to existing main and abandonment of existing sewer.

Installation of 2,670 LF of 22-foot wide asphalt pavement and sub base.

Crushing and shaping approximately 10,260 syd of roadway.

Placing approximately 1,540 ton of HMA mixture.

1.02 CONTRACTS

All work will be awarded in one contract.

1.03 ALTERNATES

No alternatives for this work are being requested.

1.04 WORK BY OTHERS

No work by others is anticipated that will affect work under this project.

1.05 FUTURE WORK

No future work is anticipated that will affect work under this project.

1.06 WORK SEQUENCE

No special sequencing is required.

1.07 COORDINATION

Coordinate all work with the OWNER to minimize any inconvenience.

1.08 AVAILABILITY OF LANDS

All work will take place on property owned or controlled by the OWNER or within the public right-of-way.

1.09 PRE-ORDERED ITEMS

No items have been pre-ordered for this project.

1.10 OWNER FURNISHED ITEMS

No items are to be Owner furnished for this project.

1.11 PROJECT IDENTIFICATION AND SIGNS

Project identification signs are required.

1.12 AUDIO-VIDEO ROUTE SURVEY

Contractor shall be required to provide an audio-video route survey for prior to start of construction. The audio-video survey shall be in accordance with Section 01300 SUBMITTALS.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Refer to Article 14 of the General Conditions.
- B. Bid price includes all labor, tools, equipment, materials, transportation, and applicable fees, use tax, and sales tax necessary to complete the work in accordance with the Plans and Specifications.
- C. All measurement and payment will be based on completed work, ready for use, performed in strict accordance with the Plans and Specifications.
- D. Bid quantities listed in the Bid Schedule have been estimated and are only for the purpose of comparing, on a uniform basis, the Bids offered for the Work. Completed quantities for payment will be based on field measurements.
- E. Neither the Owner nor his agents shall be held responsible should any of the estimated quantities be found incorrect.
- F. Payment will be made only on items listed in the BID SCHEDULE. All other work not listed in the BID SCHEDULE shall be considered incidental to the performance of the Work.
- G. Owner reserves the right to delete any line item or quantity on the BID SCHEDULE.

1.02 APPLICATION FOR PAYMENT

- A. Pay period: 30 days.
- B. Payment requests shall be submitted on the forms included in the Specifications.

1.03 SUBMITTALS

- A. Submit Conditional Partial Waiver of Lien with each application for payment request, as specified in the General Conditions paragraph 14.2.
- B. Submit a schedule of values in accordance with Section 01300 for all Bid items.
- C. Prior to the first partial payment, submit a construction progress schedule in accordance with Section 2 of the General Conditions.

1.04 ITEMS OF THE BID FORM

Measurement and Payment for the Pay Items listed on the Bid Schedule shall be as follows:

- A. Item No. 1 Mobilization
 - 1. Payment includes obtaining bond, preparatory work and operation, for the movement of personnel, equipment, supplies, and incidentals to the project site; establishment of a project office and other facilities needed to undertake the Work.
 - 2. Unit of measure: Lump Sum.

- B. Item No. 2 Audio Visual Route Survey
 - 1. Payment includes two copies of an audio-video recording or digital file transfer of the proposed site construction area submitted to Engineer for review prior to the preconstruction meeting. Any recorded coverage not acceptable to the Owner shall be redone at no additional charge. No materials or equipment are to be on the construction site prior to review and approval of the audio-video recording.
 - 2. Unit of measure: Lump Sum
- C. Item No. 3 Traffic Control
 - 1. Payment includes furnishing and operating all barricades, signing, detour routes, flagmen, fencing, warning devices and other materials and equipment to control traffic and safeguard the work site.
 - 2. Unit of measure: Lump Sum.
- D. Item No. 4 Soil Erosion and Sedimentation Control
 - 1. Payment includes installation, monitoring, cleaning and replacement as required of inlet filters or approved protection measures at all storm water collection structures throughout the construction area. Other measures as required to prevent sand and sediment from entering open drains, ditches, culverts and discharging to adjacent lakes and all other needed work as stated in Section 2071 or as directed by the engineer.
 - 2. Unit of Measure: Lump Sum.
- E. Item No. 5 Crush and Shape HMA Pavement & Base
 - 1. Payment includes saw cutting and/or pulverizing the existing HMA pavement and aggregate base, and shaping, grading and compacting the crushed material in areas shown on the plans. It also includes salvaging and replacing crushed material in areas of utility installation, disposal of excess material, and transporting material within the project limits.
 - 2. Unit of measure: Square yard of pavement crushed, based on the typical cross-section shown on plans.
- F. Item No. 6 Concrete Removal
 - 1. Payment includes sawcutting, removing, and disposing of concrete sidewalk, driveway or other miscellaneous pavement.
 - 2. Unit of measure: Square yard of concrete removed.
- G. Item No. 7 Grading
 - 1. Payment includes the movement and or redistribution of the soil, sand, rock, gravel, sediment, or other material and compaction.
 - 2. Unit of measure: Lump Sum.
- H. Item No. 8 Adjust the Drainage Structure
 - 1. Payment includes the adjustment to drainage structure.
 - 2. Unit of measure: Each
- I. Item Nos. 9 - 10 Water Main
 - 1. Payment includes all material and labor necessary for proper installation of the watermain including but not limited to piping, fittings, joint restraints, bedding, backfill, fill materials, thrust blocks, locators, flushing and testing.
 - 2. Unit of measure: Lineal foot installed, measured along center of pipe from center of fitting to center of fitting for each size and material of pipe listed in the Bid Schedule.
- J. Item No. 11 Gate Valve
 - 1. Payment includes installation of valve, valve box with lid.
 - 2. Unit of measure: Each valve installed for each size listed in the Bid Schedule.
- K. Item No. 12 New Water Services and Replacement of Existing Water Services

1. Payment includes installation, excavation, compaction, trimming, corporation stop, piping, fittings, flushing, disinfection, curb stop valve, box, lid, stationary rod, supporting block under the box, adapter if necessary, and connection to existing service line. New service line shall be 1" unless otherwise noted. New and replacement work will be limited to the ROW area and six- (6) feet from the ROW line.
 2. Unit of measure: Each water service installed or replaced for each size listed in the Bid Schedule.
- L. Item No. 13 Hydrant Assembly
1. Payment includes installation of hydrant including snow barrel, shut off valve, valve box with lid, tee, piping from main to hydrant, and pipe restraints as shown on plans.
 2. Unit of measure: Each hydrant assembly installed.
- M. Item No. 14 Salvage Existing Hydrant Assembly
1. Payment includes removal of existing hydrants, delivery of hydrants to Village DPW or disposal.
 2. Unit of measure: Each existing hydrant assembly removed as indicated on the Plans and listed in the Bid Schedule.
- N. Item No. 15 Connection, Cut Cap and Abandon Existing Water Main
1. Payment includes making connection to existing watermain, cutting, plugging or capping existing main, remove existing valve (valve housing, assembly, box and lid) delivery of valves to Village DPW or disposal, piping, fittings, joint restraints, bedding, backfill, fill materials, thrust blocks, locators, flushing, testing and material removal.
 2. Unit of measure: Each.
- O. Item No. 16 Sanitary Sewer Bypass Pumping
1. Payment includes bypass pumping of sanitary wastewater for the replacement of existing sewer, service connections, and connections to existing sewer as shown on the plans.
 2. Unit of measure: Lump Sum.
- P. Item No. 17 Sewer Manholes (4' Diameter)
1. Payment includes installation or replacement with new 4' diameter sanitary sewer manholes and watertight boots, frames and castings.
 2. Unit of measure: Each structure listed in the Bid Schedule.
- Q. Item No. 18 Sanitary Sewer
1. Payment includes new sanitary sewer, installation, fittings, bedding, backfill, fill materials, testing, and video as shown on the plans.
 2. Unit of measure: Linear feet of sanitary sewer for each size listed in the Bid Schedule.
- R. Item No. 19 New Sanitary Sewer Services and Replacement of Existing Sanitary Sewer Services
1. Payment includes installation of 6-inch sanitary sewer piping from new wye sewer connection to the ROW, sewer wye, fittings, and connection to existing customer service.
 2. Unit of measure: Each sanitary service installed or replaced for each size listed in the Bid Schedule.
- S. Item No. 20 Sanitary Sewer Removal
1. Payment includes removal and disposal of existing sanitary sewer as needed for installation of new.
 2. Unit of measure: Linear feet of sanitary sewer for each size listed in the Bid Schedule.
- T. Item No. 21 Sanitary Sewer Structure Abandonment

1. Payment includes abandonment of existing sanitary sewer structures according to the specifications, capping and abandoning existing piping, and disposal of materials.
 2. Unit of measure: Each.
- U. Item No. 22 Sanitary Sewer Connect to Existing System
1. Payment includes connection to existing sanitary sewer system piping or structure where indicated on the plans. Including but not limited to materials, fittings, coring, boots, backfill, bedding, plugging, and incidentals.
 2. Unit of measure: Each.
- V. Item No. 23 HMA Mixture
1. Payment includes HMA material, placement of pavement, and testing.
 2. Unit of measure: Tons of asphalt measured from truck loads and placed to the limits as shown on Drawings, for the type of HMA mixture listed in the Bid Schedule as defined within the Specifications.
- W. Item No. 24 Driveway, CI II, 3 inch
1. Payment includes HMA material, placement of pavement, and testing.
 2. Unit of measure: Tons of asphalt measured from truck loads and placed to the limits as shown on Drawings, for the type of HMA mixture listed in the Bid Schedule as defined within the Specifications.
- X. Item No. 25 Shoulder, CI II, 3 inch
1. Payment includes HMA material, placement of pavement, and testing.
 2. Unit of measure: Tons of asphalt measured from truck loads and placed to the limits as shown on Drawings, for the type of HMA mixture listed in the Bid Schedule as defined within the Specifications.
- Y. Item No. 26 Install Concrete Sidewalk
1. Payment includes preparation of base, base material, placement of aggregate, compaction, reinforcement, placement of concrete, finishing, and testing.
 2. Unit of measure: Square Foot of concrete surface measured in place.
- Z. Item No. 27 Install Concrete Driveway
1. Payment includes preparation of base, base material, placement of aggregate, compaction, reinforcement, placement of concrete, finishing, and testing.
 2. Unit of measure: Square Foot of concrete surface measured in place.
- AA. Item No. 28 ADA Tactile Strip
1. Payment includes providing and placing according to specifications and ADA guidelines.
 2. Unit of measure: Linear Foot.
- BB. Item No. 29 Restoration
1. Payment includes providing, placing and grading topsoil, providing and placing seed, fertilizer, and mulch, finish raking and restoration of all areas disturbed by construction activities.
 2. Unit of measure: Lump Sum.

END OF SECTION

SECTION 01050
FIELD ENGINEERING

PART 1 GENERAL

1.01 STAKEOUT AND SURVEYING

- A. Owners responsibility: Provide staking in accordance with Supplementary Conditions SC-4.05.A.
- B. Contractors responsibility:
 - 1. Obtain field measurements, line and grade control, and facility locations based on guideline staking provided by the Owner.
 - 2. Preserve and protect all field staking provided by the Owner.
 - 3. Compensate the Owner for all costs of replacement of staking damaged by the Contractor.

1.02 SOIL BORINGS

- A. Soil borings were not conducted at the site.

1.03 EXISTING UTILITIES

- A. Existing utilities are shown on the Plans in their approximate location, based on the available data.
- B. The Owner will not be responsible for omissions or variations from the locations shown.
- C. Contact Miss Dig (1-800-482-7171) 72 hours prior to any excavation to locate existing buried utilities.
- D. Preserve and protect existing utilities from damage. Repair all damage to existing utilities at no cost to the Owner. Work stoppages resulting from damaged utilities will not entitle the Contractor to additional payment.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01060

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 PERMITS AND FEES

- A. Owners responsibility: The owner will obtain the following permits where applicable.
 - 1. EGLE permit in accordance with Part 41 of Act 451, P.A. 1994 for construction of sanitary sewer facilities.
 - 2. EGLE permit in accordance with Part of Act 399, P.A. 1976.
 - 3. MDOT permit for work within state right-of-way.
 - 4. Soil Erosion and Sedimentation Control Act, Part 91 of Act 451, P.A. 1994.
 - 5. County Road Commission permit for work within county right-of-way.
 - 6. EGLE Wetland permit in accordance with Part 303 of Act 451, P.A. 1994.
 - 7. EGLE Inland Lakes and Streams permit in accordance with Part 301 of Act 451, P.A.

1994.

- B. Contractors responsibility:
 - 1. Meet provisions and requirements of all permits obtained by the Owner.
 - 2. All local or state permits and fees required that are not listed in Section 01060 1.01.A.
 - 3. If applicable, contractor shall get bonding for construction within state highway right-of-

way.

- C. All permits obtained to date are attached at the end of the specifications.

1.02 APPLICABLE CODES

- A. All references to codes, specifications, and standards shall refer to the latest edition, amendment, or revision of the reference in effect on the BID due date.
- B. Abbreviations used for codes and references are listed in Section 01090 ABBREVIATIONS AND SYMBOLS.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01090

ABBREVIATIONS AND SYMBOLS

PART 1 GENERAL

1.01 DEFINITIONS

- A. Reference to codes, standards, institutions, associations, or government authorities is made in accordance with the following abbreviations:

AASHTO	- American Association of State Highway Officials
ACI	- American Concrete Institute
AISC	- American Institute of Steel Construction
AISI	- American Iron and Steel Institute
ANSI	- American National Standard Institute
ASTM	- American Society of Testing Materials
AWS	- American Welding Society
AWWA	- American Water Works Association
BOCA	- Building Officials Code Association
FAA	- Federal Aviation Association
EGLE	- Michigan Department of Environment Great Lakes and Energy
MDOT	- Michigan Department of Transportation
MDNR	- Michigan Department of Natural Resources
MI-OSHA	- Michigan Department of Occupational Safety and Health Association
NEC	- National Electric Code
NEMA	- National Electrical Manufacturers Association
NFPA	- National Fire Protection Association
RECD	- Rural Economic Community Development
USEPA	- United States Environmental Protection Agency
UL	- Underwriter's Laboratories

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01200
PROJECT MEETINGS

PART 1 GENERAL

1.01 PRECONSTRUCTION MEETING

- A. Prior to delivery of materials or the start of any construction a preconstruction meeting will be held.
- B. The Engineer will establish the meeting place, time and date, distribute agenda, notify participants, and administer the meeting. Contractor shall notify major subcontractors.
- C. Attendance:
 - 1. OWNER
 - 2. ENGINEER
 - 3. CONTRACTOR
 - 4. Major Subcontractors
 - 5. Utility Companies
 - 6. Safety Representatives
 - 7. Governmental Agencies
- D. Agenda:
 - 1. Distribution by Contractor and discussion of:
 - a. List of names and telephone numbers for superintendent, foreman and other key personnel.
 - b. List of major subcontractors and suppliers.
 - c. Projected Construction Schedules.
 - 2. Critical work sequencing.
 - 3. Major equipment deliveries and priorities.
 - 4. Project coordination
 - 5. Responsibilities of Owner, Engineer, Contractor and other agencies.
 - 6. Utility Discussions
 - a. Critical Utilities
 - 7. Permit Issues
 - 8. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change orders.
 - e. Application for payment.
 - 9. Adequacy of distribution of Contract Documents.
 - 10. Procedures for maintaining Record Documents.
 - 11. Use of premises.
 - 12. Construction facilities, controls and construction aids.
 - 13. Temporary utilities.
 - 14. Safety and first aid procedures.
 - 15. Security procedures.
 - 16. Housekeeping procedures.
 - 17. Testing and Staking
 - 18. Record Documents
 - 19. Sign Contracts

- E. The Engineer will prepare minutes and distribute copies to participants within seven (7) days of meeting. Participants shall report corrections and comments within ten (10) days of receipt of minutes.

1.02 PROGRESS MEETINGS

- A. Periodic Progress Meetings will be held as required by the progress of the work.
- B. The Engineer will establish the meeting place, time and date, distribute agenda, notify participants and administer the meeting. Contractor shall notify major subcontractors.
- C. Attendance:
 - 1. OWNER
 - 2. ENGINEER
 - 3. CONTRACTOR
 - 4. Subcontractor as appropriate to the agenda.
 - 5. Suppliers as appropriate to the agenda.
 - 6. Others
- D. Agenda:
 - 1. Review minutes of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Review field observations, problems, and conflicts.
 - 4. Review problems that impede Construction Schedules.
 - 5. Review of shop drawings, off-site fabrication, and delivery schedules.
 - 6. Review corrective measures and procedures to regain projected schedule.
 - 7. Review revisions to Construction Schedules.
 - 8. Review plan progress, schedule, during succeeding work period.
 - 9. Review coordination of schedules.
 - 10. Review submittal schedules; expedite as required.
 - 11. Review maintenance of quality standards.
 - 12. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other Contracts of the Project.
 - 13. Other business.
- E. The Engineer will prepare minutes and distribute copies to participants and Owner within seven (7) days of meeting for review at the next meeting.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 CONSTRUCTION SCHEDULE

- A. Preparation:
1. Prepare in the form of a horizontal bar chart, CPM network, or other form previously approved by the Engineer.
 2. Provide a separate horizontal bar column or path for each trade or operation.
 3. Prepare the schedule in the chronological order of the beginning of each item of work.
 4. Allow space for updating.
 5. The schedule sheets shall be 11" x 17" unless otherwise approved by the Engineer.
- B. Content of schedule:
1. Provide a complete sequence of construction by activity.
 2. For Shop Drawings, project data, and samples show the following:
 - a. Submittal dates.
 - b. Dates review copies will be required.
 3. Show product procurement and delivery dates.
 4. Show dates for beginning and completion of each element of construction.
 5. Show projected percentage of completion for each item of work as of the first day of each month.
- C. Updating Schedule:
1. Show all changes occurring since previous submission of the updated schedule.
 2. Indicate progress of each activity and show completion dates.
 3. Other items required in schedule updates are:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.
 - c. Revised projections due to changes
 - d. Other identifiable changes.
- D. Submittals:
1. Submit initial schedule within 15 days after receipt of a Notice to Proceed.
 2. Submit updated schedules accurately depicting progress to the first day of each month.
 3. Progress schedules shall be included with the Contractor's monthly application for payment

1.02 APPLICATION FOR PAYMENT

- A. Preparation:
1. Applications for payment to be submitted in accordance with Article 14 of the General Conditions.
 2. Application for payment shall be made on forms provided by or approved by the Engineer.
- B. Schedule of Values:
1. Contractor shall submit a schedule of values for all lump sum items in the Bid Schedule.
 2. A preliminary schedule of values shall be submitted to the Engineer for review and approval prior to the preconstruction meeting.
 3. Schedule of values will be used only as the basis for the Contractor's application for payment.

C. Submittals

1. Contractor shall submit three signed copies to the Engineer for review.
2. Application for payment shall be submitted to the Engineer as agreed to at the preconstruction meeting.

1.03 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. General:

1. Provide shop drawings in accordance with Article 6 of the General Conditions.
2. Shop Drawings are to be scaled drawings large enough to show all pertinent features of the item and its method of connection to the Work.
3. Literature from manufacturers that includes data not pertinent to this submittal, shall be clearly marked to indicate which portion of the contents is being submitted for the Engineer's review.
4. Samples shall illustrate materials, equipment, or workmanship and establish standards by which completed work is judged.
5. Unless otherwise specifically directed by the Engineer, all samples shall be of the precise article proposed to be furnished.

B. Submittals:

1. Submit the number of copies that the Contractor requires to be returned, plus three copies that will be retained by the Engineer.
2. All submittals are to be accompanied with a transmittal form that will be provided by or approved by the Engineer.
3. Contractor to thoroughly check Shop Drawings for compliance with the Contract Documents and verify field dimensions and construction criteria:
 - a. Indicate approval by stamping "Approved", with Contractor's signature and date on all copies submitted.
 - b. Shop Drawings submitted without stamped approval of the Contractor will be returned without review.
4. Clearly indicate all deviations in the Shop Drawings from the requirements in the Contract Documents.
5. Make submittals in groups containing all associated items.
6. Provide submittals in advance of scheduled dates of installation to allow time for Engineer review, possible revision, and re-submittal; and for placing orders and securing delivery.
7. Allow 15 working days for Engineer review after receipt of submittal.
8. Cost of delays caused by late submittals shall be the responsibility of the Contractor.

C. Review of submittals:

1. Submittals will be returned marked with Engineer's review comments.
2. Rejected submittals shall be revised by the Contractor and resubmitted.
3. Engineer's checking of Shop Drawings does not relieve the Contractor of responsibility for errors or omissions.

1.04 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Manuals shall be in durable plastic binders approximately 8½ " x 11" in size with at least the following:
 - a. Identification on, or readable through, the front cover stating general nature of the manual;
 - b. Neatly typewritten index near the front of the manual;

- c. Complete instructions regarding operation and maintenance of all equipment involved;
 - d. Complete nomenclature of all replaceable parts, their part numbers, and name and address of nearest vendor of parts;
 - e. Copies of all guarantees and warranties issued;
 - f. Copy of the approved Shop Drawing and all data concerning all changes made during construction.
2. Manuals that include manufacturer's catalog pages shall, clearly indicate the precise items included in this installation and delete or otherwise clearly indicate all manufacturers' data with which this installation is not concerned.
- B. Submittals:
1. Provide 3 copies of the manual to the Engineer unless indicated otherwise in pertinent Sections.
 2. Submit operation and maintenance manuals prior to initial equipment startup.

1.05 AUDIO-VIDEO ROUTE SURVEY

- A. General:
1. When required in Section 01010 SUMMARY OF WORK, the Contractor shall furnish the engineer with an Audio-Video Route Survey record of the existing conditions.
 2. Audio-Video Route Surveys shall:
 - a. Be recorded on a DVD.
 - b. By electronic means, display continuously the date (month, day and year) and time (hours, minutes and seconds).
 - c. Be made on continuously running DVDs.
 - d. Be recorded at a rate of speed, equal to a slow walk (2 mph), in the general direction of travel. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that stop action during play-back will produce clarity of detail of the object viewed.
 - e. Be done during times of good visibility. No recording shall be done during periods of visible precipitation, standing water or snow cover unless approved by the Engineer.
- B. Content:
1. Complete coverage including all surface features located within the public right-of-way, easement areas and adjacent private properties up to building line when such properties lie within the zone of influence of construction.
 2. Coverage shall include but not limited to:
 - a. Driveways
 - b. Sidewalks
 - c. Curbs
 - d. Ditches
 - e. Roadway
 - f. Landscaping
 - g. Trees
 - h. Culverts, headwalls, and retaining walls
 - i. Buildings located within the zone of influence
 3. Houses and buildings shall be identified visually by house number, when visible, in such a manner that structures can be located by reference.
 4. All locations shall be identified by audio or visual means at intervals not to exceed 100 linear feet in the general direction of travel.

C. Submittals:

- a. One copy of the DVD shall be submitted to Engineer for review before the preconstruction meeting.
- b. The Engineer shall review the DVD within five full working days of receipt.
- c. Any taped coverage not acceptable to the Owner shall be redone at no additional charge.
- d. Contractor shall not place materials or equipment on the construction site prior to review and approval of the audio-video recording.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes, testing required by the Owner to determine that materials and methods provided for the Work meet the specified requirements. Testing includes, but is not limited to:
1. Bituminous pavement.
 2. Concrete.
 3. Soil gradation.
 4. Welding.
 5. Water quality testing.
 6. Density testing.

1.02 UNIT PRICES

- A. The Contractor will be responsible for providing and paying for all testing procedures as described in Article 13 of General Conditions unless specified in this section.
- B. The Contractor will be responsible for selecting proper testing laboratories subject to Engineer's approval.
- C. Inspections and testing performed exclusively for the Contractor's convenience will be paid for by the Contractor.
- D. The Owner will select the testing laboratories and pay for the following tests/inspections:
1. Density testing
 2. Density and extraction testing of asphalt
 3. Grading of subbase and aggregate base
 4. Concrete testing

1.03 QUALITY ASSURANCE

- A. Testing shall be in accordance with all pertinent codes, regulations, procedures, and requirements of the ASTM and other appropriate agencies.

PART 2 PRODUCTS -Not Used

PART 3 EXECUTION

3.01 PROCEDURE

- A. Provide representatives of the testing laboratory with access to the Work at all times.
- B. Coordinate the Work with the testing required. Provide a minimum of 24 hours notice to the testing laboratory prior to the need of testing.
- C. Furnish all material required for sampling. The testing laboratory will obtain all specimens and samples required for testing. The testing laboratory will be responsible for transporting samples to the laboratory.
- D. The testing laboratory will furnish two copies of lab reports to the Engineer and one copy to the Contractor.

END OF SECTION

SECTION 01536

SAFETY PRECAUTIONS AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

- A. Provide and maintain adequate facilities for the protection and safety of all persons and property in accordance with Article 6 of General Conditions.

1.02 UNIT PRICES

- A. All work under this Section shall be considered as incidental to construction.

1.03 REFERENCED STANDARDS

- A. Unless otherwise specified, the work for this Section shall conform to all State and National laws, ordinances, rules and regulations pertaining to the kind, including but not limited to the following Standard Specifications:
 - 1. State of Michigan "Occupational Safety and Health Act", Act 154 of the Public Acts of 1974 (MIOSHA) as administered by the Michigan Department of Labor and Public Health.
 - 2. MDOT Michigan Manual of Uniform Traffic Control Devices (MMUTCD)

PART 2 PRODUCTS

2.01 SIGNS AND BARRICADES

- A. Provide in accordance with MDOT Michigan Manual of Uniform Traffic Control Devices - Part 6.

2.02 TEMPORARY FENCING

- A. All fencing shall be strong and durable enough to discourage unauthorized entrance, constructed with the following materials:
 - 1. Posts: Wood or steel
 - 2. Fabric: Snow fence type, wood or plastic, 4 feet high.

PART 3 EXECUTION

3.01 GENERAL

- A. Provide adequate warning signs, barricades, lights, and flagmen as necessary for the protection of the work and safety of the workmen and general public. Control devices shall:
 - 1. Protect workmen and the public from all open trenches and excavations.
 - 2. Provide temporary fencing to discourage unauthorized entrance.
- B. All barricades, signs, lights, and other protective devices shall be installed and maintained in conformance with the transportation authority having jurisdiction.
- C. Designate all streets or roads that are closed with barricades and warning signs. Closing of roads shall be approved by the authority having jurisdiction. Properly notify the local emergency services prior to closing of any road.

- D. Maintain temporary fencing throughout the duration of construction.
- E. Remove temporary fencing at project completion or after permanent fencing is installed.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Provide and maintain traffic control equipment and personnel to protect the work and workmen, and to ensure the least possible obstruction to traffic and inconvenience to the general public.
 - 2. Meet all the requirements of the construction permit issued by the right-of-way owner.
- B. Related Sections:
 - Section 01025 MEASUREMENT AND PAYMENT

1.02 UNIT PRICES

All work under this Section shall be considered as incidental to construction, unless specifically indicated on the BID SCHEDULE and referred to in Section 01025 MEASUREMENT AND PAYMENT.

1.03 REFERENCED STANDARDS

MDOT Michigan Manual of Uniform Traffic Control Devices (MMUTCD)

PART 2 PRODUCTS

2.01 GENERAL

All products shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices.

PART 3 EXECUTION

3.01 DETOURS

- A. Contractor shall be solely responsible for acts or omissions resulting in any legal proceedings due to improper or inadequate detour or safety controls.
- B. Submit proposed detour route to the Engineer, the municipality, and all emergency services for approval prior to construction in the detour area.
- C. Keep fire hydrants adjacent to the work accessible to firefighting equipment at all times.
- D. Keep police, fire, and other emergency services informed of the status of road closings.

3.02 PUBLIC ACCESS

- A. Maintain traffic access in accordance with local laws and regulations having jurisdiction.
- B. Minimize the time that vehicular and pedestrian access to any occupied home, or other building is interrupted. Maintain continuous access to businesses.
- C. Maintain temporary driveways, roadways, and crosswalks in good, usable condition until they are fully restored. As a minimum, provide 6 inches of compacted 22-A aggregate at all driveways.

END OF SECTION

SECTION 01600
MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish all labor, tools, facilities, and materials necessary to properly transport, handle, store and protect all materials and equipment necessary for the performance of the work.
- B. All materials shall be new.
- C. Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals and that products are properly protected and undamaged.

1.02 TRANSPORTATION AND HANDLING

- A. Properly protect all materials and equipment to prevent damage during transportation and handling.
- B. Detailed special handling requirements are specified under the appropriate specification section for the products handled.

1.03 STORAGE AND PROTECTION

- A. Store all materials and equipment to insure the preservation of their quality and fitness for the work.
- B. Store packaged materials in their original containers until ready for use.
- C. Protect all materials and equipment before, during, and after installation.
- D. Provide suitable weather tight storage sheds with raised floors to store and protect materials and equipment that could be damaged by exposure to weather.
- E. Repair or replace all damaged materials and equipment, subject to Engineer approval.
- F. No damaged material shall be used in the work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes substitution of materials, articles, and equipment.
- B. Recommend substitutions in accordance with this section and Section 6.05 of the General Conditions.
- C. Products of equal capacities, quality and function shall be considered.

PART 2 PRODUCTS

2.01 GENERAL

- A. Submit five copies of a complete list of all products proposed for installation within 30 days after date of Contract, unless otherwise indicated in the Contract Documents.
- B. Tabulate the list by each Specification Section.
- C. Include the following for referenced products:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data including performance and test data, and reference standards.

PART 3 EXECUTION

3.01 CONTRACTOR'S OPTIONS

- A. For products specified by reference, select any product meeting the standards.
- B. Submit a request for substitution for products specified by name.

3.02 GENERAL

- A. Written requests from Bidders will only be considered if received at least ten working days prior to Bid date.
- B. The Engineer will consider formal requests from the Contractor for substitution of specified products within thirty days of Contract unless specified elsewhere in the Contract Documents.
- C. Submit three copies of all substitution requests, plus the number the Contractor would like returned.

- D. Substitutions will not be considered if:
 - 1. Indicated or implied on Shop Drawings or project data submittals without formal request submitted in accordance with this Section and Section 6.05 of the General Conditions.
 - 2. Acceptance will require substantial revision of the Contract Documents.

3.03 SUBMITTALS

- A. Complete data substantiating compliance with the Contract Documents.
- B. For products:
 - 1. Product identification, including manufacturer's name and address.
 - 2. Manufacturer's literature, including product description, performance and test data, and reference standards.
 - 3. Samples.
 - 4. Name and address of similar projects on which the product was used and date of installation.
 - 5. Detailed drawings for modifications to other aspects of the project required for the substitution in accordance with Section 6.05.A.2 of the General Conditions.
- C. For construction methods:
 - 1. Detailed description of the proposed method.
 - 2. Drawings illustrating methods.

3.04 CONTRACTOR'S RESPONSIBILITIES

- A. Investigate the proposed product or method and determine that it is equal or superior in all respects to that which is specified.
- B. Provide the same guarantee for the substitution as for the product or method specified.
- C. Coordinate installation of the accepted substitution into the work, making changes as required for the work to be completed in all respects.
- D. Waive all claims for additional costs related to the substitution.
- E. Include itemized cost estimate in accordance with Section 6.05.A.2 of the General Conditions.

END OF SECTION

SECTION 01700
CONTRACT CLOSE-OUT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes contract close-out requirements.
- B. Contract close-out shall be done in accordance with the Contract Documents before final payment will be released.

1.02 CLEANING

- A. Clean the site in accordance with Section 6.11 of the General Conditions.

1.03 PROJECT RECORD DOCUMENTS

- A. Provide one set of record documents in accordance with Section 6.12 of General Conditions.
- B. Provide materials certifications as specified by the Engineer.
- C. Submittal of the Record Documents shall be made with a transmittal letter containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each Record Document

1.04 GUARANTEES

- A. Provide in accordance with Section 6.19 of the General Conditions.
- B. Manufacturer's Guarantee:
 - 1. For each item of equipment, furnish the guarantee of the manufacturer.
 - 2. Guarantee that the equipment will perform its intended service and that any defective design or workmanship shall be corrected or replaced at no expense to the OWNER.
 - 3. The guarantee period of the manufacturer's guarantee shall be one year from the date of final payment of the project by the Owner, unless specified otherwise.

1.05 SUBSTANTIAL COMPLETION

- A. Certification that the work is substantially complete shall be in accordance with Section 14.04 of the General Conditions.

1.06 FINAL INSPECTION AND PAYMENT

- A. The final inspection, final application for payment and acceptance shall be in accordance with Section 14.06 through 14.09 of the General Conditions.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 02140

DEWATERING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes providing and maintaining dewatering equipment to dispose of surface water and ground water from all excavations and trenches.

1.02 UNIT PRICES

Dewatering will be considered incidental to the construction, unless specifically indicated on the BID SCHEDULE and referred to in Section 01025 MEASUREMENT AND PAYMENT.

1.03 SUBMITTALS

- A. Submit a description of the proposed system to the Engineer prior to installation.
- B. Description shall include the number, size, and length of wells, pumping equipment, temporary underdrain location, discharge location, and sedimentation control measures.

1.04 QUALITY ASSURANCE

- A. Design of the dewatering method shall be the responsibility of the Contractor.
- B. Comply with the Soil Erosion and Sedimentation Control Act, and other state and local codes that govern dewatering activities.

1.05 DESIGN REQUIREMENTS

- A. Dewatering system shall be capable of lowering the static water table a minimum of 12 inches below all excavations.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PERFORMANCE REQUIREMENTS

- A. Duration of dewatering:
 - 1. Continuously until the structure or pipe is installed.
 - 2. Prevent damage from hydrostatic pressure, flotation, or other causes.
- B. Reliability:
 - 1. Monitor the dewatering system at frequent intervals to insure proper operation.
 - 2. Provide stand-by equipment as necessary to avoid equipment or power failure.
- C. Discharge:
 - 1. Prevent sand and silt from discharging into sewer drains or natural waterways.
 - 2. Provide silt fencing, sediment traps, or other methods to protect surface water discharges.
 - 3. Remove all sediment deposits created as a result of the dewatering process.
 - 4. Do not interfere with the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other Contractors.

- D. Surface water runoff:
 - 1. Divert surface water from entering excavated areas or trenches.
 - 2. Protect adjacent property from damage.
 - 3. Repair any damage from dewatering activities at no additional cost to the Owner.
- E. Remove all dewatering wells and equipment after project completion.

END OF SECTION

SECTION 02150
SHORING AND BRACING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish, install, and maintain sheeting, shoring, bracing, and trench boxes as required to support the sides of the excavation.
- B. Prevent movement of earth that would damage the Work or existing structures, or cause injury to workmen.

1.02 UNIT PRICES

Sheeting, shoring and bracing will be considered incidental to the performance of the work, unless specifically indicated on the BID SCHEDULE and referred to in Section 01025 MEASUREMENT AND PAYMENT.

1.04 QUALITY ASSURANCES

Comply with all standards set forth in the Federal and State Occupational Safety and Health Act.

PART 2 PRODUCTS - Not used.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Provide sheeting, shoring, trench box, or bracing to prevent caving or sliding, and to protect workmen and adjacent structures and facilities.
- B. Fill and compact voids outside the sheeting.
- C. Prevent concentrated loads on any structure or pipe within the excavation.

3.02 REMOVAL

- A. Remove sheeting without damage to the installed structure or pipe, and adjacent utilities or structures.
- B. Fill all voids caused by withdrawal of sheeting with clean compacted sand.

3.03 SHEETING LEFT IN PLACE

Sheeting may be left in place with the permission of the Owner.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
1. Excavating, shaping, and grading surface
 2. Excavating and backfilling for pipe trenches
 3. Placing fill and embankments
 4. Salvaging and stockpiling select material
 5. Disposal of surplus or unsuitable material
 6. Other earthwork indicated on the plans for site modification or placement of structures.

1.02 QUALITY ASSURANCES

- A. Materials:
1. All materials used as fill or sub-base shall be approved by the Engineer.
 2. Determine gradation in accordance with ASTM C-136.
 3. Determine percent loss by washing in accordance with ASTM C-117.
- B. Compaction:
1. Determine maximum density using the Modified Proctor Method, ASTM D-1557.
 2. Engineer may approve other field determinations of maximum density, such as Michigan Cone.
 3. Field determination of in place density shall be by Nuclear Density Method, ASTM D-2922, or other approved method.
- C. Except as modified by this Section, perform earthwork in accordance with Division 2, MDOT Standard Specifications.

1.03 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specifications:

ASTM - American Society for Testing and Materials
MDOT - Michigan Department of Transportation
OSHA - Occupational Health and Safety Association

PART 2 PRODUCTS

2.01 MATERIALS

- A. General:
1. All fill material shall be approved by the Engineer prior to placement.
 2. Fill material shall be free from clay, organic matter, roots, debris, and frozen soil.
 3. Obtain fill material from on-site excavations, or from an approved borrow area.
 4. Provide Testing Laboratory with access to material source.
- B. Class II and III backfill:
Granular material meeting requirements of Section 8.02.06 of the MDOT Standard Specifications for construction.

- C. Pipe Bedding:
Granular material meeting requirements of ASTM D2321
- D. Topsoil:
Dark brown or black loam, clay loam, or sandy loam, of a fertile, humus soil origin.

PART 3 EXECUTION

3.01 DUST CONTROL

- A. Control dust at the Work area at all times to prevent dust from becoming a nuisance to the public, neighbors, or the work of others on the site.
- B. Provide moisture or otherwise treat surfaces to control dust.

3.02 TOPSOIL

- A. Removal:
 - 1. Remove all topsoil from areas to be occupied by structures, improved surfaces, or where new grades are to be established.
 - 2. Stockpile topsoil for future use in finish grading at a site approved by the Engineer.
- B. Application:
 - 1. Provide topsoil over all disturbed areas not occupied by structures or improved surfaces.
 - 2. Spread the stockpiled topsoil over the prepared rough grade to a minimum depth of 4 inches.
 - 3. Provide additional topsoil as required to complete the Work.
 - 4. Finish grade, and rake the topsoil to remove all stones, sticks, roots, and debris in preparation for seeding.
 - 5. Excess topsoil may be used for fill in non critical areas.

3.03 EXCAVATING-GENERAL

- A. Excavate to the lines and grades shown on the plans.
- B. Provide safe excavation slopes in accordance with OSHA Regulation 54 FR 45894.
- C. Protect excavation bottoms from frost.
- D. Dispose of excess excavated material off site or on site at a location approved by the Engineer.
- E. Enlarge excavations laterally to provide adequate room for construction or provide shoring and bracing in accordance with Section 02150, as necessary.

3.04 EXCAVATING, BACKFILLING, AND COMPACTING FOR STRUCTURES

- A. Over-excavation:
 - 1. In the event clay or stone is encountered at the bottom of the excavation, undercut bottom a minimum of 12 inches.
 - 2. If muck or other deleterious material is encountered, remove this material to a depth where suitable subgrade soil is encountered, unless otherwise instructed by the Engineer.
 - 3. Backfill to proposed subgrade elevation with Class II material.
 - 4. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.

- B. Backfilling:
 - 1. Remove all debris from excavation prior to backfilling.
 - 2. Compact excavation bottom to 95 % Modified Proctor density to a depth of 2 feet prior to placing backfill.
 - 3. Backfill material shall be Class II sand.
 - 4. Do not backfill against cast in place structures until approved by the Engineer.
 - 5. Do not backfill on only one side of a vertical wall unless the walls are adequately shored or the permanent structure is in place.
 - 6. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.

3.05 EXCAVATING, BACKFILLING, AND COMPACTING FOR ROAD SUBGRADE, PAVED SURFACES AND APPURTENANCES

- A. Subgrade undercutting:
 - 1. Remove all peat, muck, topsoil and other organic matter from the roadway subgrade.
 - 2. Remove all soils other than granular materials within 15 inches of the proposed subgrade elevation.
 - 3. Place Class II sand and compact to 95% Modified Proctor density to proposed subgrade elevation.
 - 4. Extend undercutting of unsuitable materials to the limit of a 1 on 1 slope spreading outward from the grade and location of the outside edge of the finished pavement, curb, or other improved surface.
- B. Backfilling around curbs, sidewalks, and appurtenances:
 - 1. Remove all debris from excavation prior to backfilling.
 - 2. Compact excavation bottom to 95 % Modified Proctor density to a depth of 2 feet prior to placing backfill.
 - 3. Backfill material shall be Class II sand.
 - 4. Do not backfill against cast in place structures until approved by the Engineer.
 - 5. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.

3.06 EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

- A. Trench excavation:
 - 1. Conduct excavation in a safe and orderly manner at all times, in compliance with all applicable safety regulations.
 - 2. Use hand tools where mechanical equipment will cause damage to adjacent trees, structures, or utilities.
 - 3. Excavate trench to the cross-section shown on the trench detail.
 - 4. Do not excavate the trench ahead of the pipe laying operation more than the Contractor can reasonably expect to backfill by the end of the work day.
 - 5. Support and protect all existing utilities encountered within the trench.
 - 6. Place excavated material where it will not obstruct sidewalks, driveways, roadways, or the work of others.
 - 7. Undercutting
 - a. In the event clay or stone is encountered at the bottom of the excavation, undercut the bottom a minimum of 6 inches.
 - b. Undercut the trench a minimum of 6 inches for plastic water main or sanitary sewers in all soils.
 - c. If muck or other deleterious material is encountered, remove this material suitable soil, unless modified by the Engineer.
 - d. Backfill to proposed pipe grade with material meeting ASTM D2321 compacted to 95% Modified Proctor density.

- B. Pipe bedding:
 - 1. Grade trench bottom to provide uniform, firm, and stable surface, free from rocks and other unsuitable materials.
 - 2. Provide a tamped sand bedding for the full length of the pipe barrel, with recesses excavated for the joints.
 - 3. Bedding material shall meet requirements of ASTM D2321.
 - 4. Place bedding simultaneously on each side of the pipe for the full width of the trench, to a depth of 1 foot above the pipe.
 - 5. Place bedding in 9 inch layers and compact to 95% Modified Proctor Density, being careful not to displace the pipe laterally.
- C. Trench backfill, critical areas:
 - 1. Class II material in areas under or within 10 feet of structures or improved surfaces.
 - 2. Place in layers not exceeding 9 inches and compact each layer, by mechanical means, to 95% Modified Proctor density.
 - 3. If trench settles greater than 1 inch within the one year following Owner's acceptance of project, the Contractor shall bring the trench back to grade and restore the surface at no additional cost to the Owner.
- D. Trench backfill, non-critical areas:
 - 1. Class III material approved by the Engineer, free from frozen soil, vegetation, and debris.
 - 2. Place in layers not exceeding 12 inches and compact each layer by mechanical means to a minimum of 90% Modified Proctor density.
- E. Pipe protection:
 - 1. Mound and compact additional granular backfill over pipe, if required, to provide a minimum cover depth of 3 feet to protect pipe while construction equipment is operating on site.
 - 2. Remove additional backfill when grading to achieve finished grade.

3.07 CONTROLLED FILLS AND EMBANKMENTS

- A. General:
 - 1. All filling under or within a 1:1 slope from the outer edge of buildings, structures, or improved surfaces shall be controlled fill.
 - 2. Material: Class II granular material, unless otherwise specified by the Engineer.
- B. Placing fill:
 - 1. Remove topsoil roots and stumps to a depth of 12 inches prior to placing fill.
 - 2. Compact existing ground to 95% Modified Proctor density prior to placing fill.
 - 3. Spread fill in uniform layers not exceeding 9 inches and compact to 95% Modified Proctor density.
- C. Compaction:
 - 1. Compacting equipment shall be heavy duty, rolling drum, vibrating type (if approved by Village Manager).
 - 2. Use pneumatic tire rollers in predominantly granular soils.
 - 3. Use sheepfoot type roller in predominantly clay soils.
 - 4. Use hand operated vibrating sled for compaction around structures.
 - 5. Other methods of producing equivalent results will be allowed when approved by the Engineer.
 - 6. Density in areas under or adjacent to structures or improved surfaces shall be to 95% Modified Proctor density.
 - 7. Density in other locations shall be to 90% Modified Proctor density.

- D. Moisture:
If material is too wet or dry for satisfactory compaction, adjust moisture content as required.

3.08 GRADING

- A. Conform to lines, contours, and spot elevations shown on the plans.
- B. Perform finish grading on ground surfaces to an accuracy of plus or minus 0.1 feet.
- C. Perform finish grading on improved surfaces to an accuracy of plus or minus 0.05 feet.

END OF SECTION

SECTION 02270
EROSION CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes, work necessary for effective temporary and permanent soil erosion and sedimentation control.
- B. Related Sections:
 - 1. Section 01025 MEASUREMENT AND PAYMENT
 - 2. Section 02200 EARTHWORK
 - 3. Section 02900 SITE RESTORATION

1.02 UNIT PRICES

Temporary and permanent erosion control measures will be considered incidental to the construction, unless specifically indicated on the BID SCHEDULE and referred to in Section 01025 MEASUREMENT AND PAYMENT.

1.03 QUALITY ASSURANCES

Perform all Work in accordance with the Michigan Soil Erosion and Sedimentation Control Act, Part 91 of Act 451, P.A. 1994, and with the requirements of the local agencies having jurisdiction over the Work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Seed, fertilizer, and mulch: Provide as specified in Section 02900 SITE RESTORATION.
- B. Provide temporary and permanent structures and materials in accordance with the Michigan Department of management and Budget Keying System. See Figure 1 at the end of this section.
- C. Mulch blanket:
 - 1. Materials: 100% straw sewn into a lightweight, photo degradable netting.
 - 2. Model: S75.
 - 3. Straw content: 0.5 pounds per square yard.
 - 4. Manufacturer: North American Green.
- D. Geotextile filter fabric:
 - 1. Materials: Mechanically bonded, non-woven geotextile.
 - 2. Manufacturer: Amoco
 - 3. Model: CEF 4553
 - 4. Tensile strength: 203 lbs. (ASTM D-4632).
 - 5. Tensile elongation: 50% min. (ASTM D-4632).
 - 6. Tear strength: 80 lbs. (ASTM D-4533).
 - 7. Puncture strength: 130 lbs. (ASTM D-4833).

8. Apparent opening size: 100 sieve (ASTM D-4751).
- E. Rip rap stone: (4-6")
 1. Material: native fieldstone from local gravel pits, exhibiting sound structure and strength for the intended use.
 2. Size: 1" to 6" stone.
 3. Gradation:
 - a. $D_{100} = 6$ inch
 - b. $D_{50} = 4$ inch
 - c. $D_{10} = 2$ inch
- F. Rip rap stone: (10-12")
 1. Material: native fieldstone from local gravel pits, exhibiting sound structure and strength for the intended use.
 2. Size: 6" to 12" stone.
 3. Gradation:
 - a. $D_{100} = 12$ inch
 - b. $D_{50} = 10$ inch
 - c. $D_{10} = 8$ inch
- G. Silt fence:
 1. Conforming to Michigan Department of Transportation Standard Specifications.

PART 3 EXECUTION

3.01 GENERAL

Conduct site evaluation with the Engineer and the soil erosion control officer prior to starting work.

3.02 TEMPORARY EROSION CONTROL

- A. Minimize the area of earth disturbed at any one time.
- B. Provide berms or ditches to divert storm runoff from the construction area when steep slopes or highly erodible soils are present.
- C. Contain all sedimentation on site by using straw bales, filter fence, or sedimentation basins.

3.03 PERMANENT EROSION CONTROL

- A. When final grades have been established, provide topsoil, seed, fertilizer, and mulch.
- B. Water all seeded areas as necessary to establish proper vegetative cover.
- C. Should erosion occur within the guarantee period, regrade and reseed the disturbed area at no additional cost to the Owner.

3.04 MULCH BLANKET

- A. Provide mulch blanket on all slopes 3:1 or steeper, that are disturbed during construction or as indicated on the plans.

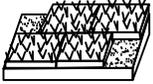
- B. Prepare soil prior to placing mulch blanket with topsoil, seed and fertilizer.
- C. Place mulch blanket from top of slope down so overlap seams run parallel to slope.
- D. Overlap seams a minimum of 2" on parallel seams, and six inches, shingle style, on perpendicular splices.

END OF SECTION



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
EROSION CONTROLS			
E1	SELECTIVE GRADING AND SHAPING		To reduce steep slopes and erosive velocities.
E2	GRUBBING OMITTED		For use on steep slopes to prevent rilling, gullyng, and reduce sheet flow velocity or where clear vision corridors are necessary.
E3	SLOPE ROUGHENING AND SCARIFICATION		Where created grades cause increased erosive velocities. Promotes infiltration and reduces runoff velocity.
E4	TERRACES		On relatively long slopes up to 8% grades with fairly stable soils.
E5	DUST CONTROL		For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.
E6	MULCH		For use in areas subject to erosive surface flows or severe wind or on newly seeded areas.
E7	TEMPORARY SEEDING		Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E10	SODDING		On areas and slopes where immediate stabilization is required.
E11	VEGETATED CHANNELS		For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
E13	GABION WALLS		On newly created or denuded stream banks to reduce velocity until permanent stabilization is achieved or on existing banks to retard erosive velocities.
E14	ENERGY DISSIPATOR		Where the energy transmitted from a concentrated flow of surface runoff is sufficient to erode receiving area or watercourse.
E15	TEMPORARY SLOPE DRAIN		Where surface runoff temporarily accumulates or sheet flows over the top of a slope and must be conveyed down a slope in order to prevent erosion.
E16	SLOPE DRAIN		Where concentrated flow of surface runoff must be permanently conveyed down a slope in order to prevent erosion.

B = BIOENGINEERING



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S-E-S-C KEYING SYSTEM

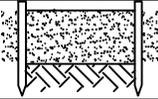
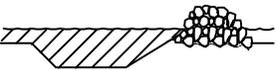
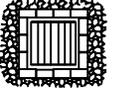
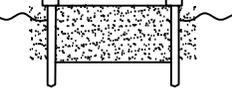
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E17	CELLULAR CONFINEMENT SYSTEMS		Used on steep slopes and high velocity channels.
E18	PLASTIC SHEETS		Used on exposed slopes, seeded areas, new ditch bottoms, and areas subject to surface runoff and erosion. Used as a liner in temporary channels and to stabilize stockpiles.
E19	TEMPORARY DRAINAGEWAY/ STREAM CROSSING		Use on construction sites where stream/drainageway crossings are required.
E20	TEMPORARY BYPASS CHANNEL		Use within existing stream corridors when existing flow cannot be interrupted, and at culvert and bridge repair sites
E21	LIVE STAKING		In areas requiring protection of slopes against surface erosion and shallow mass wasting.
EROSION / SEDIMENT CONTROLS			
ES31	CHECK DAM		Used to reduce surface flow velocities within constructed and existing flow corridors.
ES32	STONE FILTER BERM		Use primarily in areas where sheet or rill flow occurs and to accommodate dewatering flow.
ES33	FILTER ROLLS		In areas requiring immediate protection of slopes against surface erosion and gully formation and for perimeter sediment control.
ES34	SAND FENCE		For use in areas susceptible to wind erosion, especially where the ground has not yet been stabilized by other means.
ES35	DEWATERING		Use where construction activities are limited by the presence of water and dry work is required.
ES36	DIVERSION DIKE/BERM		Within existing flow corridors to address or prevent erosion and sedimentation, or on disturbed or unstable slopes subject to erosive surface water velocities.
ES37	DIVERSION DITCH		In conjunction with a diversion dike, or where diversion of upslope runoff is necessary to prevent damage to unstabilized or disturbed construction areas.
ES38	COFFERDAM/SHEET PILING		Constructed along or within water corridor or waterbody to provide dry construction area.
ES39	STREAMBANK BIOSTABILIZATION		For use along banks where stream and riparian zones may have difficulty recovering from the long-term effects of erosion.
ES40	POLYMERS		To minimize soil erosion and reduce sedimentation in water bodies by increasing soil particle size.
ES41	WATTLES		In areas requiring protection of slopes against surface erosion and gully formation.

B = BIOENGINEERING



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
SEDIMENT CONTROLS			
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S52	CATCH BASIN SEDIMENT GUARD		Use in or at stormwater inlets, especially at construction sites.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S54	TIRE WASH		For use on construction sites where vehicular traffic requires sediment removed from its tires in highly erosive areas.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.
S56	SEDIMENT TRAP		In small drainage areas, along construction site perimeters, and above check dams or drain inlets.
S57	VEGETATED BUFFER/FILTER STRIP		Use along shorelines, waterways, or other sensitive areas. Slows velocity, reduces sediment load, and reduces erosion in areas of sheet flow.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.
S60	INLET PROTECTION STONE		Use around urban stormwater inlets.
S61	TURBIDITY CURTAIN		Use during construction adjacent to a water esource, to contain sediment within the work area when other BMP's cannot be used.

B = BIOENGINEERING

SECTION 02310
DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide all labor, tools, equipment necessary for directional drilling of piping.
- B. This section specifies fusible pipe and installation methods by horizontal directional drilling (HDD).
- C. Contractor shall be responsible for all installation processes included drilling, back-reaming, management and disposal of all drilling fluid, dewatering flow around his work, and leak testing the fusible pipe and fittings in accordance with these specifications.
- D. All pipe installation shall be in compliance with EGLE *Suggested Practice for Water Works Design, Construction, and Operation for Type I Public Water Supplies*.

1.02 RELATED SECTIONS

01300	SUBMITTALS
02140	DEWATERING
02660	WATER DISTRIBUTION
02733	SANITARY SEWER FORCE MAIN

1.03 REFERENCED STANDARDS

The work shall conform to the applicable portions of the following standard specifications:

ANSI	- American National Standards Institute
ASTM	- American Society for Testing and Materials
AWWA	- American Water Works Association
EGLE	- Michigan Department of Environment Great Lakes and Energy (Previously the MDEQ - Michigan Department of Environmental Quality)
NSF	- National Sanitation Foundation
MDOT	- Michigan Department of Transportation

1.04 QUALITY ASSURANCE

- A. Contractor Qualifications
 - 1. The contractor and field supervisory personnel shall have at least 3 years experience in directional drilling and familiarity in drilling subsurface and site conditions.
- B. Fusion Technician Requirements
 - Fusion Technician shall have a current qualification by the pipe supplier to install fusible pipe of the type(s) and size(s) being used.
- C. Warranty
 - 1. In addition to the standard pipe warranty, the fusing contractor shall provide a written one-year warranty all the fusion joints
 - 2. Warranty periods shall begin on the date of the project's substantial completion.

1.05 SUBMITTALS

- A. Product data for pipe.
- B. Fusion joint data fusion joint warranty information, and recommended project specific fusion parameters, including criteria logged and recorded by data logger.
- C. The following product data and information is required from the Contractor:
 - 1. Directional drilling equipment information indicating the applicability of equipment to the size and scope of the project.
 - 2. Bentonite drilling mud products information (MSDS); special precautions necessary; method of mixing and application; and method of removing soils.
 - 3. Directional drilling operator certification and references.
 - 4. Project safety and contingency plan including drilling fluid containment and cleanup procedures, equipment and plan for compromised utility installations including electrical and power lines, water, wastewater and any other subsurface utility.
 - a. Submit the HDD schedule identifying daily work hours and working dates two weeks prior to the start of work.
 - b. Submit drilling fluid information, including handling procedures, material safety data sheets methods of mixing and application, and disposal plan.
- D. Submit as-built information including:
 - 1. Pipe and fusing information:
 - a. Pipe Size and Dimensions
 - b. Machine Size
 - c. Fusion Technician Identification
 - d. Job Identification Number
 - e. Fusion Number
 - f. Fusion, Heating, and Drag Pressure Settings
 - g. Heat Plate Temperature
 - h. Time Stamp
 - i. Heating and Cool Down Time of Fusion
 - j. Ambient Temperature
 - 2. Pipeline installation information:
 - a. Pipeline horizontal offset from the baseline and depth of cover, a maximum of every 25 feet and at all changes in direction, whichever is less.
 - b. All fittings, valves, or other appurtenances and their location.
 - c. Other deviations from the original plans.

PART 2 PRODUCTS

2.01 HDPE (HIGH DENSITY POLYETHYLENE) PIPING AND FITTINGS

- A. HDPE pipe will be produced from resins meeting the requirements of ASTM D1248, designation PE3408, ASTM D3350 cell classification, PE34543C, and will meet the requirements of AWWA C901 and C906. Pipe will be legibly marked at intervals of no more than five feet with the manufacturer's name, trademark, pipe size, HDPE cell classification, NSF-pw, appropriate legend such as SDR 11, ASTM D3035, AWWA C901, or C906, dates of manufacture and point of origin. Pipe not marked as indicated above will be rejected.
- B. Water Pipe to be used for this project will conform to the AWWA C906 specification. The pipe will be black with blue stripes on the exterior and black on the inside. The water pipe shall be IPS or DIPS DR 11 HDPE PE3408 C901/C906, at a minimum.
- C. All HDPE materials used for water mains must be listed and approved for use with potable water

under ANSI/NSF Standard 14. The exterior wall print line of all HDPE pipe proposed for installation and potable use must bear the NSF-pw identification.

- D. Provide HDPE adapter at each end of the directional drill.
- E. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

2.02 TRACER WIRE

- A. All piping shall be installed with a continuous, insulated TW, THW, THWN, or HMWPE insulated copper, 10 gauge or thicker wire for pipeline location purposes by means of an electronic line tracer.
 - 1. The wires must be installed along the entire length of the pipe.
 - 2. Sections of wire shall be spliced together using approved splice caps and waterproof seals. Twisting the wires together is not acceptable.
 - 3. Wire shall be colored according to utility type. Blue for water, green for sewer and drain lines. Other Village owned utilities shall meet standard color code.

2.04 WATER SERVICES

- A. Water services shall be the same material specified in Section 02660 WATER DISTRIBUTION.
- B. Services connected to HDPE mains:
 - 1. Use fusion connector approved to be used with HDPE Philmac connection or equal, capable of being joined with K-copper pipe.
 - 2. Provide flexible connector from HDPE main to copper service pipe.

2.03 DRILLING SYSTEM EQUIPMENT

- A. General
 - 1. The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore(s) and pullback of the pipe(s), a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations, and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. All required equipment shall be included per the emergency and contingency plan as submitted per these specifications.
- B. Drilling Rig
 - 1. The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull drill pipe while delivering a pressurized fluid mixture to a steer-able drill head. The machine shall be anchored to withstand the pulling, pushing and rotating forces required to complete the project.
 - 2. The drilling rig hydraulic system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks.
 - 3. The drilling rig shall have a system to monitor and record maximum pull-back hydraulic pressure during pull-back operations.
- C. Drill Head
 - 1. The horizontal directional drilling equipment shall produce a stable fluid lined tunnel with the use of a steer-able drill head.
 - 2. The system must be able to control the depth and direction of the pipe.
 - 3. Drill head shall contain all necessary cutters and fluid jets for the operation, and shall be of the appropriate design for the medium being drilled.

- D. Drilling Fluid System
1. Drilling Fluid (Mud)
 - a. Drilling fluid shall be composed of clean water and the appropriate additive(s) for the fluid to be used. Water shall be from a clean source and shall meet the mixing requirements of the manufacturer.
 - b. The water and additives shall be mixed thoroughly to assure the absence of any clumps or clods. No hazardous additives may be used.
 - c. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall(s).
 - d. Drilling fluid shall be disposed of off-site in accordance with local, state and federal requirements and/or permit conditions.
 - e. No additional chemicals or polymer surfactants shall be allowed to be added to the drilling fluid as submitted for this project without written consent of the Owner and/or Engineer.
 2. Mixing System
 - a. A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid for the project.
 - b. The mixing system shall be able to ensure thorough mixing of the drilling fluid. The drilling fluid reservoir tank shall be sized for adequate storage of the fluid.
 - c. The mixing system shall continually agitate the drilling fluid during drilling operations.
 3. Drilling Fluid Delivery And Recovery System
 - a. The drilling fluid pumping system shall have a minimum capacity to supply drilling fluid in accordance with the drilling equipment pull-back rating at a constant required pressure.
 - b. The delivery system shall have filters or other appropriate in-line equipment to prevent solids from being pumped into the drill pipe.
 - c. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. The use of spill containment measures shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps, vacuum truck(s), and/or storage of sufficient size shall be in place to contain excess drilling fluid.
 - d. A closed-loop drilling fluid system and a drilling fluid cleaning system should be used to whatever extent practical, depending upon project size and conditions. Under no circumstances shall drilling fluid that has escaped containment be reused in the drilling system.
- E. Pipe Pull Heads
1. Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
 2. Pipe pull heads shall be specifically designed for use with fusible pipe, and shall be as recommended by the pipe supplier.
- F. Drilling Control System
1. Calibration of the electronic detection and control system shall be verified prior to the start of the bore.
 2. The drilling head shall be remotely steer-able by means of an electronic or magnetic detection system. The drilling head location shall be monitored in three dimensions:
 - a. Offset from the baseline,
 - b. Distance along the baseline, and
 - c. Depth of cover.
 3. Point of rotation of the head shall also be monitored.
 4. For gravity application and on-grade drilling, sonde/beacon or approved equipment applicable for grade increments of 1/10th of one percent shall be used.

5. The control system shall be capable of generating a plot of the borehole survey for the purpose of a record drawing.

PART 3 EXECUTION

3.01 GROUND WATER CONTROL

- A. Provide a dewatering method, as necessary, in accordance with Section 02140 DEWATERING.

3.02 FUSION PROCESS

A. General

1. Fusible pipe shall be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's recommendations.
2. Each joint fusion shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this specification.
3. The fusible pipe shall be installed in a manner so as not to exceed the recommended bending radius.
4. Where fusible pipe is installed by pulling in tension, the recommended Safe Pulling Force, according to the pipe supplier, shall not be exceeded.
5. Other equipment specifically required for the fusion process shall include the following:
 - a. Pipe rollers shall be used for support of pipe to either side of the machine.
 - b. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement and /or windy weather.
 - c. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 - d. Facing blades specifically designed for cutting fusible pipe.

B. Joint Recording

- Use an electronic monitoring device (data logger) connected to the fusion machine to log each joint.

3.03 DRILLING OPERATIONS

A. General

1. Grades, radii, and alignment of the proposed HDD installation are presented in the drawings for reference and intended bore path. Entry and exit locations and control-point elevations shall be maintained as shown on the drawings and specified, unless approved by the Owner or Engineer.
2. Bend radii shown on the drawings are minimum allowable radii and shall not be reduced. Control-point elevations shown on the drawings are minimum allowable cover and/or separation and shall not be reduced.

B. Location and Protection of Underground Utilities

1. Correct location of all underground utilities that may impact the HDD installation is the responsibility of the Contractor, regardless of any locations shown on the drawings
2. Utility location and notification services shall be contacted by the Contractor prior to the start of construction.
3. Identify all existing lines and underground utilities, including exposing those facilities that are located within an envelope of possible impact of HDD installation as determined for the project specific site conditions. The Contractor shall determine the safe offset from

existing utilities. This will include, but is not limited to, soil conditions and layering, utility proximity and material, HDD system and equipment, and foreign subsurface material.

- C. Drilling Layout and Tolerances
 - 1. Instrumentation shall be provided and maintained at all times that accurately locates the pilot hole, measures drill-string axial and torsional loads and measures drilling fluid discharge rate and pressure.
 - 2. Do not exceed the pipe manufacturer's recommended bending limitations at the entry and exit areas

- D. Pilot Hole Bore
 - 1. In the event that the pilot bore does deviate from the bore path, Contractor shall notify the Engineer. The Engineer may require contractor to pull-back and re-drill from the location along bore path before the deviation.
 - 2. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling and contact the Owner and Engineer.
 - 3. Owner and/or Engineer shall approve the pilot hole bore alignment prior to back reaming phase and pipe installation.

- F. Reaming
 - 1. After successfully completing the pilot hole, the bore hole shall be reamed to a diameter which meets all local jurisdictional standards and the following table as a minimum:

Nominal Pipe Diameter	Bore Hole Diameter
< 8 inches	Pipe Dia. + 4 inches
8 inches to 24 inches	Pipe Dia. x 1.5
> 24 inches	Pipe Dia. + 12 inches

- 2. Multiple reaming passes shall be used at the discretion of the Contractor and shall conform to these specifications.
- 3. A swivel shall be used between the reaming head and the fusible pipe to minimize torsion stress on the assembly.
- 4. In the event of a drilling fluid fracture, returns loss or other loss of drilling fluid, the Contractor shall be responsible for restoring any damaged property to original condition and cleaning up the area in the vicinity of the damage or loss. Contractor shall immediately inform the Owner and Engineer.

3.04 PIPE PULL-BACK AND INSERTION

- A. Pipe shall be fused prior to insertion, if the site and conditions allow, into one continuous length.
- B. Contractor shall handle the pipe in a manner that will not over-stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not over-deflect, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
- C. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
 - 1. The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.
 - 2. The fusible pipe may be continuously or partially supported on rollers or other Owner and Engineer approved friction decreasing implement during joining and insertion, as long as the pipe is not over-stressed or critically abraded prior to, or during installation.

- D. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's recommendations. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.
- E. Pullback operations shall continue without interruption until the pipe is completely pulled through the bore hole. Except for drill rod removal, pull-back operation shall not cease until the pipe has been completely installed to final position. During the pull-back operations, excessive pullback force shall be reported to Owner and Engineer.
- F. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any damages caused by the Contractor's operations shall be corrected by the Contractor at no cost to the Owner.

3.05 INSTALLATION ACCEPTANCE AND CLEANUP

- A. If the final grade of the finished installation is not satisfactory to the Owner, Engineer or other jurisdictional entity, the pipe shall be abandoned, full pressure grouted in place in accordance with the jurisdictional authority, and an alternate installation shall be made. The abandoned pipe shall be shown on as-built drawings. If the pipe is abandoned, the Contractor shall re-drill another line at no additional cost to the Owner.
- B. The Contractor shall inspect the installed pipe ends for roundness and/or damage. Evidence of significant surface scratching shall be brought to the attention of the Engineer. Gouges or excessive surface damage of more than 10 percent of the wall thickness may be grounds to abandon the bore and have the Contractor re-drill another line at no additional cost to the Owner.
- C. Following the installation, the project site shall be returned to a condition equal to or better than the pre-construction condition of the site. All excavations will be backfilled and compacted to 95% maximum density. All pavements and hard surfaces shall be repaired, and excess materials shall be removed from the site, all drilling fluid shall be properly disposed.

3.06 TESTING AND DISINFECTION

Refer to Section 02660 - WATER DISTRIBUTION

3.07 PIPE SYSTEM CONNECTIONS

Pipe connections shall be installed according to applicable standards and regulations, and the connection manufacturer's recommendations and as indicated on the drawings. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations.

3.08 TRACER WIRE TESTING

- A. Upon completion of the directional bore, the Contractor shall demonstrate that the wire is continuous and unbroken through the entire run of the pipe.
 - 1. Demonstration shall include full signal conductivity (including splices) when energizing for the entire run in the presence of the Owner or Engineer.
 - 2. If the wire is broken, the Contractor shall repair or replace it. Pipeline installation will not be accepted until the wire passes a continuity test.

END OF SECTION

SECTION 02511
BITUMINOUS PAVING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes all labor, materials, tools and equipment necessary for complete construction of bituminous surfaces.
- B. Related Sections:
 - Section 01025 MEASUREMENT AND PAYMENT
 - Section 02200 EARTHWORK

1.02 UNIT PRICES

Refer to Section 01025 MEASUREMENT AND PAYMENT

1.03 QUALITY ASSURANCES

- A. Provide and place in accordance with Division 4.0 of the MDOT Standard Specifications.
- B. Testing:
 - 1. Provide material for bituminous extractions and aggregate analysis as requested by the Engineer.
 - 2. Determine pavement density by Nuclear Gage Method using the test strip method.
 - 3. All materials used as fill or sub-base shall be approved by the Engineer.
 - 4. Determine gradation in accordance with ASTM C-136.
 - 5. Determine percent loss by washing in accordance with ASTM C-117.
- C. Base compaction:
 - 1. Determine maximum density using the Modified Proctor Method, ASTM D-1557 or other engineer approved method.
 - 2. Field determination of in place density shall be by Nuclear Density Method, ASTM D-2922, or other engineer approved method.
- D. Furnish weight slips for all bituminous material.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Base material: MDOT 22A Aggregate.
- B. Leveling course: MDOT 13A
- C. Wearing course: MDOT 13A
- D. Bond Coat: MDOT SS-1h.

PART 3 EXECUTION

3.01 AGGREGATE PAVING BASE

- A. Place a minimum depth of 6 inches compacted in place.
- B. Extend paving base to the width required for gravel shoulders. Provide a minimum depth of 8 inches compacted in place for gravel shoulders.
- C. Compact to 98% maximum density.
- D. Adjust moisture content as required to achieve compaction.
- E. Grading:
 - 1. Finish grade base to the elevations and cross sections shown on the Drawings.
 - 2. Do not place paving until the Engineer has approved the base.

3.02 BITUMINOUS SURFACE

- A. Apply bituminous paving in 2 course(s) of 1.5 inches and 1.5 inches.
- B. Compact by rolling to 95% maximum density.
- C. Apply bond coat at a rate of 0.10 gal/syd between each pavement course.
- D. Paver shall not lay pavement faster than 110 feet per minute.
- E. Vibratory rollers must be approved by Village DPW Superintendent before use.

3.03 PRESERVATION OR REMOVAL OF PAVEMENT SURFACES

- A. Minimize the amount of existing pavement which must be removed.
- B. Protect pavement outside of the payment limits.
- C. Repair any damage to pavement surfaces outside of the payment limits at no cost to the Owner.
- D. Saw cut pavement to full depth at removal limits.

3.04 TEMPERATURE AND SEASONAL LIMITATIONS

According to MDOT Specifications 2012 Section 501.03:

- A. Weather Limitations
 - a. Do not pave when moisture content prevents the bituminous from properly curing.
 - b. Paving may occur if the surface temperature of the ground is at least 35°F and there is no presence of frost on paving section or nearby.
 - c. Place greater than 200 pounds per square yard if temperature is above 35°F.
 - d. Place greater than 120 pounds per square yard if temperature is above 40°F.
 - e. Place any amount if temperature is above 50°F.
- B. Seasonal Limitations
 - Paving may occur from May 15 to November 1 unless otherwise approved by Engineer in writing.

3.05 PAVEMENT PATCHING

- A. Trench preparation: Place and compact backfill as specified in Section 02200 EARTHWORK.
- B. Joint preparation:
 - 1. Saw cut pavement a minimum of 1 foot beyond the damaged area.
 - 2. Sweep adjacent road surfaces clean of all dirt and debris.
 - 3. Apply a bond coat at a rate of 0.10 gal/syd on all saw cut edges of the existing pavement.
 - 4. Butt joint new pavement to existing pavement.
- C. Payment limits:
 - 1. Trench crossing road:
 - a. A distance equal to the excavation depth plus the diameter of the pipe; measured perpendicular to and extending to both sides of the pipe line.
 - 2. Trench longitudinal to road:
 - a. ¼ of pavement width to be replaced if less than ¼ is removed.
 - b. ½ of pavement width to be replaced if more than ¼ but less than ½ is removed.
 - c. full width to be replaced if more than ½ of pavement is removed.
- D. Place aggregate paving base and bituminous surface as specified in paragraph 3.01 and 3.02.

3.06 BITUMINOUS RATES

	<u>Base</u>	<u>Top</u>
Residential, Local Access and Commercial:	165	165
Industrial, Collector and Arterial:	165	165

3.07 TESTING FREQUENCY

- Subgrade: One Density Test every 500 feet, per lane (95% max. modified proctor)
- Subbase: One Gradation Test every 10,000 cubic yards – Class II material
One Density Test every 500 feet, per lane (95% max. modified proctor)
- Base: One Gradation Test every 3,000 cubic yards – Class II material
One Density Test every 500 feet, per lane (95% max. modified proctor)
- Asphalt: One Gradation Test every 1,000 tons – 22A material
Three Cores per 1,000 tons (per course)
Minimum Core Density 92% TMD
Maximum Core Density 97% TMD
Air Voids +/- 1.0%
VMA +/- 1.2%
Maximum Specific Gravity +/- 0.19
Asphalt Content +/- 0.5%
Crushed +/- 15%

END OF SECTION

SECTION 02513
CONCRETE SURFACES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes, all materials, labor, tools, and equipment necessary for the construction of concrete surfaces, including sidewalks and curb and gutter.
- B. Related Sections:
 - 1. Section 01025 MEASUREMENT AND PAYMENT
 - 2. Section 02200 EARTHWORK
 - 3. Section 01300 SUBMITTALS

1.02 UNIT PRICES

Refer to Section 01025 MEASUREMENT AND PAYMENT

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete reinforcement:
 - 1. Conform to MDOT Section 905.
- B. Concrete:
 - 1. Conform to MDOT Table 601-2.
 - 2. MDOT Grade P1, 3500 psi concrete mix.
- C. Joint filler:
 - 1. Fiber joint filler conforming to ASTM D-1751.
- D. Sand base:
 - 1. Provide compacted sand base as specified in Section 02200, EARTHWORK.
- E. Mix Design:
 - 1. Mix design shall be submitted to Engineer.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Perform all earthwork necessary to conform to the finish grades shown on the Plans.
- B. Prepare base as specified in Section 02200, EARTHWORK.
- C. Backfill and compact all voids remaining after forms are removed.

3.02 CONCRETE PAVEMENT

- A. Construct concrete pavement as shown on plans in conformance with Section 602 of the MDOT Standard Specifications and Section 801 for Concrete Driveways.

B. Dimensions:

1. Length: As required to replace existing, or as shown on Plans.
2. Width: Meet existing, or as shown on Plans.
3. Thickness: 9" minimum or greater if required to meet existing.
4. Slope: Meet existing, slope to drain.

C. Joints:

1. Concrete pavement joints shall be placed in a pattern as shown in MDOT Standard Plan II-42 series, Sheet 5 of 6, "Joints for Concrete Pavement Widening".
2. Transverse construction joints, Symbol C, shall be placed to match joints in the existing pavement.

D. Reinforcement:

1. Wire fabric reinforcement shall be placed in all concrete pavement in accordance with MDOT Standard Plan II-45 series.

E. Finish: Finish surface in accordance with MDOT Specification 602.

3.03 SIDEWALKS

A. Construct in conformance with Section 803 of the MDOT Standard Specifications.

B. Dimensions:

1. Length: As shown on the Plans.
2. Width: As noted on Plans or a minimum of 5'.
3. Thickness:
 - a. 4" except where thickened at drive approaches.
 - b. 6" at drive approaches as detailed on plans.
4. Slope: $\frac{1}{4}$ " per foot toward curb.

C. Joints:

1. Expansion joints:
 - a. Provide $\frac{1}{2}$ " expansion joints as shown on the Plans and as follows:
 - i. At ends of thickened sidewalk.
 - ii. At a maximum spacing of 50 feet.
 - iii. Around permanent structures in sidewalk.
 - iv. Between back of curb and sidewalk.
 - v. Sidewalk ramps meet back of curb.
2. Plane of weakness joints:
 - a. At intervals equal to the sidewalk width, or at a maximum 10 feet.
 - b. In thickened sidewalk at outer edges of driveways.
 - c. Where permanent structures are located in sidewalk.

D. Finish: Finish surface in accordance with MDOT Specification 803.

3.04 CURB AND GUTTER

A. Construct curb and gutter in accordance with Section 802 of the MDOT Standard Specifications.

B. All new curb and gutter shall be the Type, shown on the Plans.

C. Curb openings as detailed on Plans, installed at existing driveways at the location of existing curb openings shall be constructed in accordance with MDOT R-29 Series.

D. Depressed curbs to 1" height at sidewalk ramps and driveway openings.

- E. Joints:
 - 1. Provide 1" expansion joints at:
 - a. Saw cut curb ends.
 - b. Curb radius spring points.
 - c. Approximately 10 feet each side of all catch basins.
 - 2. Provide contraction joints at:
 - a. Opposite all transverse contraction joints in concrete pavement.
 - b. At 40 foot maximum intervals.
 - 3. Joints shall conform with MDOT Standard Plan II-30 series.
- F. Finish: Finish surface in accordance with MDOT Specification 803.

3.05 SIDEWALK RAMPS

- A. Construct MDOT ADA sidewalk ramps with detectable warning strips (tactile strips) at all locations where new sidewalks meet curbs.
- B. Construct in accordance with MDOT Special Detail R-28-F and Section 803 of the MDOT Standard Specifications.
- C. Dimensions:
 - 1. Length: As shown on the Plans.
 - 2. Width: 4 feet, unless noted otherwise.
 - 3. Thickness:
 - a. 6" unless otherwise noted on Plans.
 - b. Special thickness requirements are noted on the Plans.
- D. Joints:
 - 1. Provide control joints at 5 feet on center.
 - 2. Provide expansion joints at intervals not exceeding 50 feet and between all abutting buildings and structures.
- E. Finish: Finish surface in accordance with MDOT Standard Specification Section 803.

END OF SECTION

SECTION 02546
AGGREGATE SURFACES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes all labor, materials, tools, and equipment necessary for the complete installation of aggregate surfaces, including roadways, driveways, and parking areas. Also includes providing, shaping and grading the sand base.
- B. Related sections:
 - 1. Section 01025 MEASUREMENT AND PAYMENT
 - 2. Section 01410 TESTING LABORATORY SERVICES

1.02 UNIT PRICES

Aggregate surfaces will be considered incidental to the performance of the work, unless specifically indicated on the BID SCHEDULE and in Section 01025 MEASUREMENT AND PAYMENT.

1.03 QUALITY ASSURANCES

- A. Testing:
 - 1. Test in accordance with Section 01410, TESTING LABORATORY SERVICES.
 - 2. All materials used as fill or sub-base shall be approved by the Engineer.
 - 3. Determine gradation in accordance with ASTM D-136.
 - 4. Determine percent loss by washing in accordance with ASTM D-117.
- B. Compaction:
 - 1. Determine maximum density using the Modified Proctor Method, ASTM D-1557. Engineer may approve other field determinations of maximum density, such as Michigan Cone.
 - 2. Field determination of in place density shall be by Nuclear Density Method, ASTM D-2922, or other approved method.

PART 2 PRODUCTS

2.01 MATERIALS

Aggregate Surface Material: MDOT 23A Aggregate

PART 3 EXECUTION

3.01 AGGREGATE SURFACES

- A. Place a minimum depth of 6 inches compacted in place.
- B. Compact to 98% maximum density.
- C. Adjust moisture content as required to achieve compaction.
- D. Grading:
 - 1. Finish surface grade to conform to the elevations and cross sections shown on Plans.
 - 2. Contractor is responsible for verifying proper finish grades.

END OF SECTION

SECTION 02580
PAVEMENT MARKING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
1. Removal of existing pavement markings.
 2. Application of new pavement markings.

1.02 RELATED SECTIONS

- 01025 MEASUREMENT AND PAYMENT
01536 SAFETY PRECAUTIONS AND TEMPORARY CONTROLS
01570 TRAFFIC REGULATION

1.03 UNIT PRICES

Refer to Section 01025 - MEASUREMENT AND PAYMENT

1.04 REFERENCED STANDARDS

- A. Unless otherwise specified, the work for this section shall conform to all state and national laws, ordinances, rules, and regulations pertaining to the kind, including but not limited to the following standard specifications.
1. Michigan Manual of Uniform Traffic Control Devices (MMUTCD)
 2. ASTM - American Society for Testing and Materials
 3. Michigan Department of Transportation (MDOT) Standard Specifications

PART 2 PRODUCTS

2.01 MATERIALS

MDOT approved and selected from the qualified products list.

2.02 SUBMITTALS

- A. Certification from the manufacturer that the materials comply with MDOT requirements.
- B. Material Safety Data Sheets (MSDS)

PART 3 EXECUTION

3.01 GENERAL

- A. Apply pavement markings in accordance with the MMUTCD and MDOT Standard Specifications. Pavement shall be swept clean prior to application of pavement markings.
- B. Remove and reapply improperly located markings at the Contractor's expense in a manner consistent with specifications and approved by the OWNER.

3.02 WEATHER AND SEASONAL LIMITATIONS

- A. Do not apply markings to a damp surface.
- B. Do not apply markings when the surface temperature is less than 40°F.

3.03 PROTECTION OF PAVEMENT MARKINGS

- A. Keep traffic moving at all times and perform striping in a manner to prevent traffic from crossing the uncured markings.
- B. The Contractor may furnish a pavement marking convoy of three vehicles as indicated on the PAVEMENT MARKING CONVOY illustration sheets to protect the wet paint.
- C. Markings obliterated by traffic shall be retraced at the contractor's expense.

END OF SECTION

SECTION 02660
WATER DISTRIBUTION

PART 1 GENERAL

1.01 SECTION INCLUDES

Provide all labor, tools, equipment, and testing necessary for the installation of all water main and appurtenances and related sections.

1.02 RELATED SECTIONS

01025 MEASUREMENT AND PAYMENT
02200 EARTHWORK

1.03 UNIT PRICES

Refer to Section 01025 MEASUREMENT AND PAYMENT

1.04 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specification:

ANSI - American National Standards Institute
ASTM - American Society for Testing and Materials
AWWA - American Water Works Association
NSF - National Sanitation Foundation

1.05 SUBMITTALS

Submit complete sets of shop drawings and product data to the ENGINEER for review and approval, prior to ordering any material.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Piping shall not be stacked higher than four feet. Suitable racks, chairs and other supports shall be provided to protect pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends.
- B. All pipe and other materials subject to ultraviolet or ozone attack shall be protected from the sunlight, atmosphere and weather and stored in suitable enclosures until ready for installation.
- C. Store all hydrants, valves and other materials off the ground, drained and kept free of water to protect against damage from freezing.

PART 2 PRODUCTS

2.01 DUCTILE IRON WATER MAIN

- A. Design standard: AWWA C151
- B. Thickness: AWWA C150, Class 52

- C. Exterior coating: AWWA C151
- D. Interior coating: AWWA C104
- E. Joints: AWWA C111
- F. Pipe marking:
 - 1. All pipe shall be marked as required by AWWA C151.
 - 2. All pipe shall be stamped NSF- pw to indicate compliance with NSF Standard 61 for potable water.
 - 3. All pipe shall have 6.0 feet of minimum cover.

2.02 HDPE WATER MAIN

- A. Design standard: AWWA C901, C906
- B. Pressure rating: 200 psi
- C. Thickness: DR-11
- D. Joints: Butt-fused, restrained-mechanical or electro-fused per industry standards
- E. Pipe marking:
 - 1. All pipe shall be marked as required by AWWA C900 latest edition.
 - 2. All pipe shall be stamped to indicate compliance with NSF Standard pw.
 - 3. All pipe shall have 6.0 feet of minimum cover.

2.03 FITTINGS

- A. Material: Ductile Iron, Class 350
- B. Design standards: AWWA C110, C153
- C. Exterior coating: Bituminous, AWWA C151, 518.1
- D. Interior coating: AWWA C104
- E. Joints: AWWA C111, Mechanical Joint

2.04 RESTRAINED JOINTS

- A. Ductile iron pipe:
 - 1. Push-on joint:
 - a. Design standard: AWWA C111
 - b. Thickness: AWWA C151, Class 52
 - c. Manufacturers:
 - i. Clow: SuperLock
 - ii. U.S. Pipe: TR FLEX
 - iii. Or Engineer approved equal
 - 2. Mechanical joint:
 - a. Retainer gland safety factor: 2:1
 - b. Design requirement: Twist-off nuts to assure actuating restraint
 - c. Manufacturers:
 - i. EBAA Iron: MEGALUG, Series 1100
 - ii. Standard International

- iii. Or Engineer approved equal
- 3. Ball joint:
 - a. Design standard: AWWA C151
 - b. Thickness: AWWA C150, Class 54
 - c. Exterior coating: Bituminous, AWWA C151, 518.1
 - d. Interior coating: AWWA C104
 - e. Joints: AWWA C110
 - f. Manufacturers:
 - i. U.S. Pipe: USIFLEX Pipe
 - ii. Clow: Ball and Socket Pipe
 - iii. Or Engineer approved equal

- B. PVC pipe:
 - 1. Design standard: AWWA C900 and AWWA C605.
 - 2. Gland design standard: ASTM A536
 - 3. Retainer gland safety factor: 2:1
 - 4. Design requirement: Twist-off nuts to assure actuating restraint
 - 5. Manufacturers: EBAA Iron: MEGALUG, Series 1100 on all fittings greater than 22.5°, valves, hydrants & joints or Engineer approved equal

2.05 GATE VALVE AND BOX

- A. Gate valves:
 - 1. Design standard: AWWA C515, Resilient Wedge
 - 2. Opening: Counterclockwise
 - 3. Nonrising stem with 2" square operating nut
 - 4. Joint: AWWA C111, mechanical joint
 - 5. Interior coating: AWWA C550
 - 6. Exterior coating: AWWA C151, 518.1
 - 7. Manufacturer: EJ Flowmaster or Engineer approved equal
- B. Box:
 - 1. Cast iron three-piece screw type, adjustable box
 - 2. Cover marked "WATER"
 - 3. Shaft: 5¼" internal diameter
- C. Gate Valve Adaptor
 - 1. Manufacturer: Adaptor Inc. or Engineer approved equal
 - 2. ¼" steel with UV Polyurethane Protective Coating
 - 3. ¾" rubber gasket attached to the Gate Valve Adaptor

2.06 HYDRANTS

- A. Design standard: AWWA C502
- B. Manufacturer: East Jordan or Engineer approved equal
- C. Model: 5-BR250, Traffic Model
- D. Features:
 - 1. Nozzles;
 - a. 2 - 2½ inch hose, N.S. Threads
 - b. 1 - 4½ inch pumper, N.S. Threads
 - 2. 24" Snow Barrel
 - 3. Operating nut: pentagon, 1 ½" inch point to flat
 - 4. Opening: Clockwise
 - 5. Inlet: 6" Mechanical Joint

6. Automatic drain: ¼" tapped and plugged
7. Depth of bury: 6.0 feet, U.L. Approved
8. Paint: Safety yellow

2.07 SERVICES

- A. Tapping saddles:
 1. Materials: ASTM B62 Brass
 2. Type: Double Strap
 - a. Only use Ductile Iron when services are $\geq 1 \frac{1}{2}$ "
 3. Manufactured and tested: AWWA C800
 4. Threads: AWWA taper thread
 5. Manufacturer: Mueller BR2S series or Engineer approved equal
 6. Inline tees: ≥ 3 " services
- B. Corporation stops:
 1. Design standard: AWWA C800
 2. Manufacturer: Mueller H-15000 or Engineer approved equal
 3. Joints: Taper thread inlet and flared copper outlet
- C. Service lines:
 1. Material: ASTM B88, Type K Copper
 2. Joints: Flared or Compression
- D. Curb stops:
 1. Design standard: AWWA C800
 2. Manufacturer: Mueller H-15204 or Engineer approved equal
 3. Joints: Flared copper or compression joints
- E. Curb box:
 1. 1" to 2" "K" Services
 - a. Cast iron
 - b. Tyler series 6500
 - c. Screw type, 2 ¼" ID
 - d. Use enlarged base w/ 2" curb stop
 - e. Use with or without stationary rod
 - f. Cover marked "Water"
 2. >3 " Ductile Iron Services
- F. Water meter:
 1. All Meters installed inside unless approved by Village
 2. Meter to match all existing Village meters
- G. Meter pit:
 1. High density corrugated polyethylene smooth interior pipe
 2. Manufacturer: Advantage Drainage Systems or Hancor Hi-Q
 3. ¾" – 1" service, use 18" diameter pipe for pit
 4. 1 ½" – 2" service, use 30" diameter pipe for pit
- H. Meter box lids:
 1. Manufacturer: Ford Meter Box Company drilled for touch read
 2. Ford Wabash Double Lid Model W32 for 18" diameter meter pits
 3. Ford Wabash Double Lid Model MC-30 for 30" diameter meter pits
 4. Feature locking lids w/ double covers
- I. Water Services:

1. 1" – 2" "K" Copper
2. > 3" Ductile Iron

2.08 TAPPING SLEEVES & VALVES

- A. Tapping valve:
1. Design standard: AWWA C509, C515
 2. Opening: Counter Clockwise.
 3. Non-Rising stem with a 2" square operating nut.
 4. Joint: AWWA C111, Mechanical Joint.
 5. Interior coating: AWWA C550
 6. Exterior coating: AWWA C151, 5181
- B. Tapping sleeve:
1. Joint:
 - a. AWWA C111, Mechanical Joint.
 - b. MSS SP60 Machined Face Joint to Tapping Valve.
 2. Cast or ductile iron
 3. Threaded and plugged port for pressure testing
 4. Coatings: As specified in paragraph 2.03.

2.09 DETECTABLE UNDERGROUND MARKING TAPE

- A. Minimum width of 3 inches.
- B. Blue colored detectable metallic tape bearing a legend similar to "Caution Buried Waterline Below."

2.10 TRACER WIRE

- A. All PVC or HDPE piping shall be installed with a continuous, insulated TW, THW, THWN, or HMWPE insulated copper, 10 gage or thicker wire for pipeline location purposes by means of an electronic line tracer.
1. The wires must be installed along the entire length of the pipe.
 2. Sections of wire shall be spliced together using approved splice caps and waterproof seals. Twisting the wires together is not acceptable.

2.11 TRACER WIRE BOX

- A. Tracer wire box shall have a cast iron cover conforming to ASTM-48 Class 25 or higher.
- B. Plastic standpipe of acrylonitrile butadiene styrene (ABS) ASTM D-1788.
- C. Manufacturer shall be VALCO Inc Mini test station, or equal.

PART 3 EXECUTION

3.01 WATER MAIN INSTALLATION

- A. Install pipe in accordance with the pipe manufacturer's recommendations including:
1. Unibell PVC Pipe Association.
 2. Ductile Iron Pipe Research Association.
 3. AWWA C600, AWWA C605 and AWWA 906.
- B. Alignment and Grade:
1. Lay pipe to the lines and grades established on the plans or as indicated by Engineer's

- stakes.
 - 2. Laying depth for water main is 6.0' of cover from top of pipe to proposed finish grade, unless shown or directed otherwise.
 - 3. Maintain a 10' horizontal separation from sewer main.
 - 4. Maintain an 18 inch minimum vertical separation from all utility crossings.
 - 5. When crossing storm or sanitary sewer, locate the water main above the sewer crossing. If the minimum cover depth cannot be met, locate the water main below the sewer crossing and position the water main section centered on the sewer.
- C. Earthwork:
Perform all trench excavation, bedding, and backfilling in accordance with Section 2200 EARTHWORK.
- D. Pipe laying:
- 1. Center the pipe within the trench with adequate clearance between the pipe and the trench sidewalls.
 - 2. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate the joints.
 - 3. Thoroughly clean all foreign matter from the pipe and keep the pipe clean during the pipe laying operations by using temporary plugs.
 - 4. Pipe shall not be installed in trenches containing water or mud without the approval of the Engineer.
 - 5. All pipe ends shall be plugged with a watertight plug when construction stops for an extended period of time or overnight.
 - 6. Prevent plugged pipe from floating.
 - 7. Damage to linings and coatings shall be cause for rejection of the complete section of pipe.
 - 8. Place a detectable tape 24" above the top of the pipe.
- E. Jointing pipe:
- 1. Thoroughly clean & lubricate bell, spigot, and gaskets.
 - 2. Only joint lubricates approved by the pipe manufacture will be permitted.
 - 3. Align the pipe & force it "Home" without damaging the joint.
 - 4. Conform to AWWA C600, AWWA C605 and AWWA C906.
- F. Joint restraint:
Install all manufactured restrained joints in conformance with the manufacturer's recommendations.
- 1. Provide adequate joint restraint at all tees, plugs, caps, hydrants, and bends deflecting 22½ degrees or more.
 - 2. Manufactured restrained joints:
 - a. Install only where indicated on the plans, in the specifications or where directed by the Engineer.
 - 3. Tie rods:
 - a. Install only where indicated on the plans, in the specifications or where directed by the Engineer.
 - b. Install where adequate earth backing is not available.
 - 4. Concrete thrust blocks:
 - a. Size and shape: As shown on the plans.
 - b. Placing pour concrete only after all connections have been made.
 - c. Location: Thrust block shall extend from the fitting to the undisturbed earth of the trench wall. Keep block behind the bell of fitting and below the hydrant drain.
 - d. Bracing: Support fittings and valves independently of the piping until the concrete has set.

- G. Connecting to existing mains:
 - 1. Provide special adapters, fittings, and pipe as required to mate the new water main with the existing water main.
 - 2. Do not connect the existing water supply system until the new water main has been pressure tested, disinfected, and approved by the engineer.
 - 3. When making the connection, swab all pipe fittings with a 4% chlorine solution.
 - 4. Provide adequate notice to owner about connections or excavations near water mains.
- H. Future connections:
 - 1. Provide thrust blocking that can be easily removed in the future.
- I. Electrical conductivity:
 - 1. Provide electrical conductivity between all ductile iron pipe, fittings and joints with the following connectors.
 - a. Brass wedges (three (3) minimum per joint)
 - b. "ElectroBond" strip connectors
 - 2. Connectors shall be capable of carrying 400 amperes for an extended period.
 - 3. Provide sufficient connectors to insure conductivity through all pipe, fittings, valves, and appurtenances.
- J. Tracer Wire and Tracer Box
 - 1. All watermain shall be laid with a 10 gage tracer wire.
 - 2. Tracer wire shall be placed 6" above watermain.
 - 3. Tracer wire shall be terminated in a tracer wire box.
 - 4. Tracer wire box shall be placed at each hydrant or approximately every 400 feet.

3.02 SETTING VALVES

- A. Set and join valves as specified for pipe sections in paragraph 3.01.
- B. Set and firmly support valve boxes over the valve. Set the box centered and plumb over the valve operating nut. Set the box lid flush with the proposed finish grade.

3.03 SETTING THE HYDRANTS

- A. Location:
 - 1. Locate as shown on the plans.
 - 2. Set hydrant plumb to the finish grade.
 - 3. Set pumper nozzle pointing towards the curb or road edge.
 - 4. Set the hydrant height to elevations shown on plans. Use hydrant extensions as shown on plans.
- B. Shut-off valve box:
 - 1. Install shut off valve, piping, and fittings as specified in paragraph 3.02.
- C. Restraints:
 - 1. Anchor shut off valve to hydrant tee with tie rods.
 - 2. Provide thrust block at hydrant base.
 - 3. Prevent thrust block concrete from covering hydrant drain.

3.04 SERVICE CONNECTIONS

- A. Tapping saddles:

1. PVC main: use on all service connections
 2. Ductile iron main:
 - a. Services 1 inch to 1 inch: Not required.
 - b. Services 1½ inch to 2 inch: Use double strap tapping saddles.
 - c. 3 inch and larger: Use inline tees for service connections.
- B. Corporation stops:
Use a corporation stop for services 2 inches and smaller as specified on the plans.
- C. Service line:
 1. Services 1 inch to 2 inch: Install type "K" copper tubing from corporation to curb stop.
 2. Services 3 inch and larger: Install ductile iron pipe.
- D. Curb stops:
 1. Services ¾ inch to 2 inch: Set curb stop and box as shown on the plans.
 - a. Set curb box plumb over valve operating stem.
 - b. Adjust box lid to proposed finish grade.
 2. Services 3 inch and Larger: Install standard gate valve with box.
 3. Flare or compression joints
- E. Earthwork:
Perform all trench excavation, pipe bedding, and backfilling in accordance with Section 2200 EARTHWORK.
- F. Cleaning:
Flush all service connections until clean.
- G. Lead Service Lines:
Report all galvanized lines or lead gooseneck piping encountered to the Engineer. Lead or galvanized services suspected of being connect to lead goosenecks will be replaced from the main to 18-inches or the first valve within the customers occupancy in accordance with PA 399.

3.05 FLUSHING

- A. General:
 1. All water main shall be flushed to remove dirt and foreign matter prior to connection to the existing water supply system.
 2. Water for flushing will be the sole responsibility of the Contractor.
 3. Water for flushing shall be from a potable source approved by the Engineer and the Michigan Department of Environment Great Lakes and Energy Drinking Water Division.
 4. If water is available from any existing system, the Contractor shall comply with any requirements from the agency that controls the existing water system.
 5. All connections to existing water supplies shall be made with a backflow prevention device in accordance with State of Michigan Act 399 and all other applicable laws of the State of Michigan.
- B. Method:
 1. Flush water mains using a "poly pig" supplied by the Contractor.
 2. Insert the "poly pig" into the main at a location and using a method approved by the Engineer.
 3. Retrieve the "poly pig" at a temporary blowoff assembly constructed by the Contractor, at a location approved by the engineer.
 4. Repeat the "poly pigging" until all foreign matter is removed.

3.06 PRESSURE TESTING

- A. General:
1. All water main shall be tested.
 2. Conduct all testing only while the engineer is present.
 3. Notify Engineer at least 24 hours prior to testing.
 4. If any section of pipe fails to pass a test, the Contractor shall determine the source of the failure, repair it, and retest the section at no additional cost to the Owner.
 5. The tests shall be repeated until satisfactory results are obtained.
- B. Test preparation:
1. Maximum test section: 2000 feet or as approved by the Engineer.
 2. Install temporary caps or pugs where necessary to test sections.
 3. Brace and sufficiently backfill all parts of the pipeline to prevent movement of the pipe.
 4. Water for testing shall be from a source approved by the engineer.
 5. If water is available from any existing system, the contractor shall comply with any requirements from the agency that controls the existing water system.
 6. Expel all air from the pipe prior to testing. If necessary to accomplish this, taps shall be made at the high points using corporation stops as specified in 2.07 B. No additional compensation will be made for taps of this type.
 7. When hydrants are in the test section, test against the main valve in the hydrant.
- C. Testing water main:
1. Testing equipment:
 - a. Low flow high pressure pump capable of producing 200 psi.
 - b. 0 to 200 psi gage with minimum gradations of 10 psi.
 - c. Measuring device approved by the Engineer.
 2. Test method: AWWA C600 for Ductile Iron Pipe or AWWA C605 for PVC Pipe.
 3. Test pressure: 150 psi, with not less than 125 psi at the highest point.
 4. Test period: 2 Hours
 5. Allowable leakage: Defined as the amount of water that must be supplied into the pipe to maintain the test pressure of 150 psi to within ± 5 psi during the test period. Leakage shall not exceed the rates shown below are for Ductile Iron as indicated in AWWA C600 or AWWA C605 for PVC Pipe:
 - a. 4 inch pipe: 0.66 gallons per 2 hour per 1000 feet of pipe.
 - b. 6 inch pipe: 0.99 gallons per 2 hour per 1000 feet of pipe.
 - c. 8 inch pipe: 1.32 gallons per 2 hour per 1000 feet of pipe.
 - d. 10 inch pipe: 1.66 gallons per 2 hour per 1000 feet of pipe.
 - e. 12 inch pipe: 1.99 gallons per 2 hour per 1000 feet of pipe.
 6. Repair all visible leakage regardless of the amount.
- D. Testing valves:
1. Test all valves in the closed position.
 2. Apply a net test pressure of 125 psi for a period of 10 minutes.
 3. A valve will be considered to have passed if after 10 minutes the pressure is within ± 2 psi of the net test pressure, and in the opinion of the Engineer, no appreciable amount of leakage takes place during the test period.

3.07 DISINFECTION

- A. General:
1. All water main shall be disinfected.
 2. All sampling must be done while the Engineer is present.
 3. Notify Engineer at least 24 hours prior to testing.
 4. Unless authorized by the Engineer, disinfect water main after pressure testing.
 5. Conduct disinfection in accordance with AWWA C651, unless specified otherwise.

- B. Disinfection procedure:
1. PolyPig and flush all water mains prior to disinfection.
 2. Utilize the AWWA continuous feed method.
 3. Inject the chlorine solution into the water main through a corporation stop installed at the opposite end of the discharge end of the main.
 4. Fill the water main with the water and chlorine solution to produce a minimum concentration of 25 parts per million at the discharge end.
 5. Valve off the water main and allow it to sit for a period of 24 hours. After 24 hours the chlorine residual must be at least 10 mg/l.
 6. Dispose of heavily chlorinated water in accordance with applicable regulations.
 7. If there is any possibility that the chlorinated discharge will cause damage to the environment, the contractor shall neutralize the discharge water in accordance with AWWA C651 Appendix B.
- C. Bacteriological testing:
1. Collect samples from the water main at locations designated by the Engineer. As a minimum, collect samples at the inlet, mid section and discharge end of the water main.
 2. Collect samples from corporation stops. Samples from fire hydrants will not be allowed.
 3. Submit samples to a laboratory approved by the Michigan Department of Environment Great Lakes and Energy Drinking Water Division and the Engineer for bacteriological analysis.
 4. The pipe section will have passed after two consecutive samples, taken at 24 hour intervals, shows an absence of coliform, atypical, or overgrowth organisms. Acceptable sample results are negative as otherwise defined by AWWA C651 and MDEQ requirements.
 5. The Engineer may, at his discretion, collect samples for bacteriological testing.
 6. Submit all test and laboratory results to the Engineer.
 7. If sample fails, repeat disinfection and sample as required at no cost to the owner.
 8. Acceptable results must be obtained and connection approved by Owner prior to any new watermain to the existing distribution system.

3.08 ELECTRICAL CONDUCTIVITY TESTING

- A. Ductile iron pipe:
1. General:
 - a. All water main shall be tested.
 - b. Conduct all testing only while a representative of the Village is present.
 - c. Notify Village at least 24 hours prior to testing.
 - d. If any section of pipe fails to pass a test, the Contractor shall determine the source of the failure, repair it, and retest the section.
 - e. The tests shall be repeated until satisfactory results are obtained.
 - f. Test labs need to be approved by Village.
 2. Method:
 - a. Test all water main and hydrants for electrical continuity.
 - b. Conduct test after pressure testing and while the pipe is at normal operating pressure.
 - c. Test the water main in section lengths approved by the Village.
 - d. Apply a direct current of 400 amps \pm 10% through the test section for a period of 5 minutes.
 - e. Measure current flow through the pipe continuously on a suitable ammeter. The current shall remain steady without interruption or excessive fluctuation.
 - f. The pipe section will have failed if it shows signs of insufficient current, intermediate current, or arcing, indicated by large fluctuations of the ammeter.

- B. PVC and HDPE pipe:
 - 1. Contractor shall demonstrate that the wire is continuous and unbroken through the entire run of the pipe.
 - a. Demonstration shall include full signal conductivity (including splices) when energizing for the entire run in the presence of the Owner or Engineer.
 - b. If the wire is broken, the Contractor shall repair or replace it. Pipeline installation will not be accepted until the wire passes a continuity test.

END OF SECTION

SECTION 02720

STORM SEWER

PART 1 GENERAL

1.01 SECTION INCLUDES

Provide all labor, tools, materials, and equipment necessary for the installation of storm sewers, drainage structures, culverts, and appurtenances as shown on the plans.

1.02 RELATED SECTIONS

02140 DEWATERING
02200 EARTHWORK
02270 EROSION CONTROL

1.03 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specifications:

ASTM - American Society for Testing and Materials
AASHTO - American Association of State Highway and Transportation Officials
MDOT - Michigan Department of Transportation

1.04 SUBMITTALS

Submit complete sets of shop drawings and product data to the ENGINEER for review and approval, prior to ordering any material.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Stack piping within manufacturer's recommended limits. Suitable racks, chairs and other supports shall be provided to protect pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends.
- B. All pipe and other materials subject to ultraviolet or ozone attack shall be protected from the sunlight, atmosphere and weather and stored in suitable enclosures until ready for installation.

PART 2 PRODUCTS

2.01 PVC PIPE

- A. Design standard: ASTM D3034
- B. Thickness: SDR 35
- C. Joints: Bell & Spigot with premium elastomeric gasket joints conforming to ASTM 3212.

2.02 HIGH DENSITY POLYETHYLENE PIPE

- A. Material: Smooth interior corrugated polyethylene pipe.
- B. Design standard:

1. 3"-10" diameter: AASHTO M252
2. 12"-36" diameter: AASHTO M294
3. 42" and larger diameter: Meeting the performance requirements of AASHTO M294.

- C. Joints and fittings:
Conform to the corresponding pipe specification and be constructed of the same material classification as the pipe.

2.03 END SECTIONS

- A. Metal: In conformance with MDOT specification 8.08.18.
- B. Concrete: In conformance with MDOT specification 8.08.19.
- C. Protective bars, grating, etc.: As noted on plans.
- D. Rip rap: See Section 02270 EROSION CONTROL.

2.04 STORM MANHOLE AND CATCH BASINS

- A. Barrel: Precast manhole riser, four foot diameter or as noted on plans, ASTM C-478 with integral base.
- B. Pipe connections:
 1. 8" - 48" pipe: Kor-N-Seal gasket, or equal.
 2. 48" - 60" pipe: A-Lock Connector, or equal.
- C. Cone: Precast eccentric cone or flat top section.
- D. Joints: ASTM C-443, rubber gasketed joints.
- E. Manhole steps: Manufacturer - MA Industries, Inc.
 1. PS1-PF-Precast Manhole.
 2. PS1-B-Block Manhole.
- F. Grade adjustment bricks: Concrete masonry units in accordance with MDOT specification 8.14.03.
- G. Casting: As noted on plans.

PART 3 EXECUTION

CONSTRUCTION CASTING

Material: EJ or equal

STORMWATER CONCENTRATOR

Material: Aqua-Swirl or equal

DESIGN PARAMETERS

1. Sites shall be designed to retain the runoff from the 25-year, 24-hour storm event.
2. Allowable discharge shall be based on a site in un-developed condition and a 2-year, 24-hour storm event.

3. Sites shall either be able to route a 100-year, 24 hour storm event without causing erosion and/or downstream flooding,
4. If a site cannot show routing of the 100-year, 24-hour storm, retention basins shall be designed based on the 100-year, 24-hour storm and the allowable site discharge.
5. Discharge from site storm systems shall not cause erosion and/or downstream flooding.
6. Sites with five acres or more of paved surface, or sites less than 5 acres that have a potential of exposing storm water to oil, grease, toxic chemicals, etc. shall have either a forebay retention basin or an equivalent storm water filter to treat the first flush (0.5" runoff from tributary impervious area).
7. Forebay shall have a minimum length to width ratio of 1.5:1 (L:W) and a maximum L:W of 4:1.
8. Storm sewers shall be designed to carry the 10-year storm.
9. Storm inlets shall accept the 10-year storm without ponding.
10. Storm pipe shall match 80% diameter.
11. Storm water shall not flow across street intersections.
12. Infiltration basins shall infiltrate within 72 hours. Basins with a bottom to ground water or a minimum of 4 feet shall be allowed an infiltration rate of 50% of the soil infiltration based on a permeability test in the vicinity of the proposed infiltration basin.
13. Sites without a permeability test or do not have a minimum of 4 feet of separation from the bottom of the infiltration area to ground water are limited to an infiltration rate of 1" per hour in the following areas:
 - a. All areas south of the Boardman River
 - b. North of the Boardman River east of US 131 and south of Hyde Street
 - c. North of the Boardman River east of Pine Street and south of Lynn Street.
 - d. North of the Boardman River east of Pine Street and south of South Park Drive.
 - e. North of the Boardman River east of East Park Drive South of Dresden Street.
14. All other areas not listed in item 13 above that do not have a permeability test or do not have 4 feet of separation from the bottom of the infiltration area to ground water shall be limited to 3" per hour as an infiltration rate.
15. Greased ditches shall carry a 10-year storm with 0.5' freeboard.
16. Ditches shall have a minimum 1' bottom width, a minimum 0.5% slope and 3H: 1V side slope.
17. Sites shall be designed based on MDEQ Best Management Practices (BMP).
18. Storm basins shall have a minimum 50' buffer from ordinary high water of any lake and/or stream. The Village may require larger buffers to protect the water body.
19. All on-site storm water systems shall include a maintenance plan.

STORM BASINS

Side Slopes: 1V:3H maximum

Maximum design water depth = 3 feet unless protected with fencing or basin provided with safety shelves at three foot depth intervals. Safety shelves shall be a minimum of 5' wide a maximum 6% slope.

RAIN EVENTS

Rainfall events based on Bulletin 71 rainfall frequency Atlas of the Midwest.

3.01 STORM SEWER PIPE INSTALLATION

- A. Install pipe in accordance with pipe manufacturers recommendations.
- B. Earthwork: Perform all trench excavation, pipe bedding, and backfilling in accordance with Section 02200 EARTHWORK.
- C. Line and grade controls:
 1. Lay all pipe in a straight line between manholes and structures.
 2. Maintain grade by the use of laser beam.

- D. Pipe laying:
 - 1. Center the pipe within the trench with adequate clearance between the pipe and the trench sidewalls.
 - 2. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate the joints.
 - 3. Thoroughly clean all foreign matter from the pipe and keep the pipe clean during the pipe laying operations by using temporary plugs.
 - 4. Pipe shall not be installed in trenches containing water or mud without the approval of the Engineer.
 - 5. All pipe ends shall be plugged with a water tight plug when construction stops for an extended period of time or overnight.
 - 6. Prevent plugged pipe from floating.

- F. Jointing pipe:
 - 1. Thoroughly clean & lubricate bell, spigot, and gaskets.
 - 2. Only joint lubricates approved by the pipe manufacture will be permitted.
 - 3. Align the pipe & force it "Home" without damaging the joint.

3.02 STORM MANHOLE AND CATCH BASIN

- A. Installation:
 - 1. Construct base sections, top cone, and castings in accordance with the details shown on the plans.
 - 2. Place base on 4 inches sand leveling base.
 - 3. Compact sand base to 95% Modified Proctor density by mechanical means.
 - 4. Manhole sections shall be set plumb.
 - 5. Seal all joints and lift holes with an approved waterproofing agent.
 - 6. Place approved backfill material around manhole in layers not exceeding 12 inches.
 - 7. Compact each backfill layer by mechanical means to 90% Modified Proctor density in non-critical areas and 95% density in critical areas, as per Section 02200 - Earthwork.
 - 8. Adjust casting to be flush with finish grade.

3.03 CONNECTING TO EXISTING DRAINAGE STRUCTURE

- A. Construct neat opening in structure wall using coring machine or hammer drill. Jackhammering or chiseling of openings will not be permitted.
- B. Seal opening around pipe with masonry and mortar to provide a leakproof seal.

3.04 ADJUSTING DRAINAGE STRUCTURE COVERS

- A. Remove existing casting, adjustment rings, bricks, etc. as required.
- B. Place bricks and/or adjustment rings as required to set casting at proper elevation.

3.05 CLEANING

- A. Clean the pipe and structures of all debris and foreign material.
- B. Remove all sediment from catch basin sumps.

END OF SECTION

SECTION 02732
SANITARY SEWERS

PART 1 GENERAL

1.01 SUMMARY

- A Section includes: all labor, materials, tools, and equipment necessary for the installation of all sanitary sewer piping, manholes, services, and appurtenances.
- B. Related sections:
 - 1. Section 02200 Earthwork
 - 2. Section 01300 Submittals

1.02 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specification:

ASTM - American Society for Testing and Materials

1.03 SUBMITTALS

Submit complete sets of shop drawings and product data to the Engineer for review and approval, prior to ordering any material in accordance with Section 01300 Submittals.

1.04 UNIT PRICES

Refer to Section 01250 – MEASUREMENT AND PAYMENT

PART 2 PRODUCTS

2.01 SANITARY GRAVITY SEWER MAIN

- A. PVC sewer main and fittings:
 - 1. Design standard: ASTM - D 3034.
 - 2. Wall thickness: SDR-35.
 - 3. Joints: Push on joint with elastomeric gasket meeting ASTM - D 3212.

2.02 SANITARY SERVICE PIPE

- A. PVC sewer service pipe and fittings:
 - 1. Design standard: ASTM - D 3034.
 - 2. Wall thickness: SDR-35.
 - 3. Joints: Push on joint with elastomeric gasket meeting ASTM - D 3212.

2.03 4 FOOT DIAMETER MANHOLES

- A. Sections:
 - 1. 4 foot diameter, precast section conforming to ASTM C-478.
 - 2. Rubber gasket joints conforming to ASTM C-443.
 - 3. Bottom slab and walls shall be cast integrally.

4. Top section:
 - a. manholes less than 4 feet deep: flat top.
 - b. manholes greater than 4 feet deep: eccentric cone.
 5. Manhole to pipe connections: Kor-N-Seal neoprene boot with stainless steel bands.
 6. Exterior shall be coated w/ coal tar waterproofing.
 7. Interior shall be coated w/ "Thoroseal" waterproofing.
 8. Depth:
 - a. < 4 feet: flat top
 - b. > 4 feet: eccentric cone top
- B. Castings: Manhole: EJ # 1040 AGS with type "A" cover
- C. Steps: CI EJ # 8509

PART 3 EXECUTION

3.01 GRAVITY PIPE INSTALLATION

- A. Earthwork: Perform all trench excavation, pipe bedding, and backfilling in accordance with Section 02200 - Earthwork.
- B. Line and grade controls:
1. Install PVC pipe according to ASTM D2321.
 2. Lay all pipe in a straight line between manholes and structures.
 3. Maintain grade by the use of laser beam.
 4. Establish line and grade control from benchmarks and site coordinate lines.
 5. Promptly report any alignment conflicts to the Engineer.
- C. Pipe laying:
1. Each section of pipe shall rest upon the pipe bed for the full length of the pipe barrel.
 2. Recess bedding to accommodate joints.
 3. Maintain pipe and joints in a clean condition.
 4. Provide concrete pipe anchors at all joints of pipe laid at slopes greater than 15 percent.
 5. Lay pipe from downstream end to upstream end.

3.02 SEWER SERVICE LEADS

- A. General:
1. Place 6 inch service leads from service wyes to property line or as indicated on the plans.
 2. Provide minimum depth of cover of 6 feet within roadway.
 3. Install a watertight plug in the end of each lead.
 4. Install cleanouts at bends and maximum spacing of 100'.
- B. Earthwork: Perform all trench excavation, pipe bedding, and backfilling in accordance with Section 02200 - Earthwork.
- C. Pipe laying:
1. Lay all pipe in a straight line between bends and structures.
 2. Maintain grade using a method approved by the Engineer.
 3. Install service leads where indicated on the plans.
 4. Maintain pipe and joints in a clean condition.
- D. Marker post:
1. Install a pressure treated 4" x 4" x 8' marker post at the end of each service lead.
 2. Set bottom of marker post plumb and level with the service lead invert.

3. Cut the post to 24 inches above finished grade after the Engineer has recorded the elevation of the marker post top.
4. Paint the exposed marker post:
 - a. Color: brown.

3.03 MANHOLES

- A. Installation:
1. Construct base, sections, top cone, and castings in accordance with the detail shown on the Plans.
 2. Place manhole base on 4 inches sand or aggregate leveling base.
 3. Compact sand base to 95% Modified Proctor density by mechanical means.
 4. Set manhole base and sections plumb.
 5. Install rubber gasket between each manhole section and lubricate according to the manufacturers specifications.
 6. Coat exterior walls with coal tar waterproofing.
 7. Place approved backfill material around manhole in layers not exceeding 12 inches.
 8. Compact each backfill layer by mechanical means to 95% Modified Proctor density.
 9. Seal all joints and lift holes with non-shrink grout.
- B. Flow Channel
1. Construct concrete flow channel as shown on the plans for each manhole.

3.04 TESTING

- A. General:
1. All gravity main piping shall be subject to air (leakage) testing, deflection testing, and television inspection prior to acceptance by the Owner.
 2. Conduct all testing only while the Engineer is present.
 3. Notify the Engineer at least 24 hours prior to testing.
 4. If any section of pipe fails to pass a test, the Contractor shall repair and retest the section at no additional cost to the Owner.
 5. The tests shall be repeated until satisfactory results are obtained.
 6. No connections shall be made on new pipe until all tests have passed.
- B. Air testing:
1. Perform low pressure air test according to Uni-Bell Plastic Pipe Association Recommended Practice UNI-B-6.
 2. Test each section of pipe from manhole to manhole or structure to structure.
 3. A pipe section shall be considered as failed if the leakage exceeds the amount allowed by ASTM F 1417. (See table 1).
 4. Initial pressure of 4 psi greater than the average back pressure of the groundwater above the pipe shall be maintained for 2 minutes to equalize air temperature.
- C. Deflection testing:
1. Perform deflection testing no earlier than 30 days after final backfill has been placed.
 2. Maximum allowable deflection is 5% as determined by ASTM D3034-89.
 3. Perform testing by pulling a properly sized "go, no-go" mandrel between manholes.
 4. Failure to pass the mandrel will indicate an unacceptable deflection, requiring re-excavation and replacement of the failed section at no additional cost to the Owner.
 5. Repeat the test until satisfactory results are obtained.
- D. Television inspection:
1. Conduct test with closed circuit television.
 2. Record inspection on VHS format video tape or DVD.
 3. Provide the Engineer with one copy of the inspection video recording within 15 days of

televising.

4. The recorded inspection shall include audio or visual aids which indicate the exact location of the video camera.
5. All defects in the sewer shall be noted during the inspection.
6. Provide written log of all defects.
7. Repair all defects at no cost to the Owner and re-televising until satisfactory results are obtained.

3.06 CLEANING

- A. Clean the sewer and manholes to the satisfaction of the Village, before testing.
- B. Cleaning shall be done with high pressure water jetting equipment. Equipment shall be approved by the Owner.
- C. Remove any debris from the sewer or manholes that was dislodged by cleaning.
- D. Clean all manhole flow channels and steps to the satisfaction of the Engineer.

3.07 CONNECT TO EXISTING MANHOLE

- A. General:
 1. Use a coring machine to cut hole in existing manhole.
 2. Install a flexible boot and adjust flow channel as needed.

END OF SECTION

SECTION 02733
SANITARY SEWER FORCE MAIN

PART 1 GENERAL

1.01 SECTION INCLUDES

Provide all labor, tools, equipment, and testing necessary for the installation of all force main and appurtenances and related sections.

1.02 RELATED SECTIONS

Section 02200 EARTHWORK
Section 01025 MEASUREMENT AND PAYMENT

1.03 UNIT PRICES

Refer to Section 01025 MEASUREMENT AND PAYMENT

1.04 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specification:

ANSI - American National Standards Institute
ASTM - American Society for Testing and Materials
AWWA - American Water Works Association
NSF - National Sanitation Foundation

1.05 SUBMITTALS

Submit complete sets of shop drawings and product data to the ENGINEER for review and approval, prior to ordering any material.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Piping shall not be stacked higher than four feet. Suitable racks, chairs and other supports shall be provided to protect pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends.
- B. All pipe and other materials subject to ultraviolet or ozone attack shall be protected from the sunlight, atmosphere and weather and stored in suitable enclosures until ready for installation.
- C. Store all valves and other materials off the ground, drained and kept free of water to protect against damage from freezing.

PART 2 PRODUCTS

2.01 DUCTILE IRON FORCE MAIN

- A. Design standard: AWWA C151

- B. Thickness: AWWA C150, Class 52
- C. Exterior coating: Bituminous, AWWA C151, 51-8.1
- D. Interior coating: AWWA C104
- E. Joints: AWWA C111
- F. Pipe marking:
 - 1. All pipe shall be marked as required by AWWA C151.

2.02 PVC FORCE MAIN

- A. Design standard: AWWA C900
 - 1. Pressure rating: 150 psi
 - 2. Thickness: SDR-18
 - 3. Joints: Rubber joint rings - ASTM D3139
 - 4. Pipe marking: All pipe shall be marked as required by AWWA C900-07.
- B. Design standard: ASTM D2241
 - 1. Pressure rating: 200 psi
 - 2. Thickness: SDR 21
 - 3. Joints: PVC pipe with solvent weld or elastomeric push on
 - 4. Pipe marking: All pipe shall be marked as required by ASTM D2241.

2.03 FITTINGS

- A. Ductile iron pipe:
 - 1. Material: Cast Iron, Class 250 or Ductile Iron, Class 350 or Engineer approved equal
 - 2. Design standards: AWWA C110, C153
 - 3. Exterior coating: Bituminous, AWWA C151, 51-8.1
 - 4. Interior coating: AWWA C104
 - 5. Joints: AWWA C111, Mechanical Joint
- B. PVC pipe:
 - 1. Material: Cast Iron, Class 250 or Ductile Iron, Class 350 or Engineer approved equal
 - a. Design standards: AWWA C110, C153
 - b. Exterior coating: Bituminous, AWWA C151, 51-8.1
 - c. Interior coating: AWWA C104
 - d. Joints: AWWA C111, Mechanical Joint with transition gasket, if required.
 - 2. Material: PVC
 - a. Design standard: PVC ASTM D1785
 - b. Pressure rating: Schedule 40
 - c. Joints: solvent weld

2.04 RESTRAINED JOINTS

- A. Ductile iron pipe:
 - 1. Push-on joint:
 - a. Design standard: AWWA C111
 - b. Thickness: AWWA C151, Class 52
 - c. Manufacturers:
 - i. Clow: Super-Lock
 - ii. U.S. Pipe: TR FLEX
 - iii. American: Fast-Grip
 - 2. Mechanical joint:

- a. Retainer Gland Safety Factor: 2:1
 - b. Design requirement: Twist-off nuts to assure actuating restraint
 - c. Manufacturers:
 - i. EBAA Iron: MEGALUG, Series 1100
 - ii. Standard International
 - 3. Ball joint:
 - a. Design standard: AWWA C151
 - b. Thickness: AWWA C150, Class 54
 - c. Exterior coating: Bituminous, AWWA C151, 51-8.1
 - d. Interior coating: AWWA C104
 - e. Joints: AWWA C110
 - f. Manufacturers:
 - i. U.S. Pipe: USIFLEX Pipe
 - ii. Clow: Ball and Socket Pipe
 - B. PVC pipe:
 - 1. Design standard: UNI-B-13
 - 2. Gland design standard: ASTM A536
 - 3. Retainer gland safety factor: 2:1
 - 4. Design requirement: Twist-off nuts to assure actuating restraint
 - 5. Manufacturers: EBAA Iron: MEGALUG, Series 2000 PV or Engineer approved equal
- 2.06 GATE VALVE AND BOX
- A. Gate valves:
 - 1. Design standard: AWWA C515, Resilient Wedge
 - 2. Manufacturer: EJ Flowmaster or Engineer approved equal
 - 3. Opening: Counter-clockwise
 - 4. Non-rising stem with 2" square operating nut
 - 5. Joint: AWWA C111, mechanical joint
 - 6. Interior coating: AWWA C550
 - 7. Exterior coating: AWWA C550
 - B. Box:
 - 1. Cast iron three piece screw type, adjustable box
 - 2. Cover marked "SEWER"
 - 3. Shaft: 5 1/4" internal diameter
- 2.07 SEWAGE AIR RELEASE AND VACUUM VALVE
- A. Body and cover: Reinforced Nylon
 - B. Internal linkage, stem: Stainless Steel, SAE 316
 - C. Float: Foamed Polypropylene
 - D. Ball Valve: American Series 4000 or approved equal
 - E. Tapping Saddle: ASTM B62 Brass Double Strap, AWWA C800 with AWWA tapered threads
 - F. Manufacturers:
 - 1. A.R.I Flow Control Accessories, Model D-025 or engineer approved equal
- 2.08 DETECTABLE UNDERGROUND MARKING TAPE
- A. Minimum width of 3 inches.
 - B. Brown colored detectable metallic tape bearing a legend similar to "Caution - Buried Pipeline Below".

2.09 TRACER WIRE

- A All PVC piping shall be installed with a continuous, insulated TW, THW, THWN, or HMWPE insulated copper, 10 gauge or thicker wire for pipeline location purposes by means of an electronic line tracer.
 - 1. The wires must be installed along the entire length of the pipe.
 - 2. Sections of wire shall be spliced together using approved splice caps and waterproof seals. Twisting the wires together is not acceptable.

PART 3 EXECUTION

3.01 FORCE MAIN INSTALLATION

- A. Install pipe in accordance with the pipe manufacturer's recommendations including:
 - 1. Unibell PVC Pipe Association.
 - 2. Ductile Iron Pipe Research Association.
 - 3. AWWA C600, "Installation of Ductile Iron Water Mains and Their Appurtenances."
 - 4. AWWA C605, "Underground Installation of PVC Pressure Pipe and Fittings for Water Main."
 - 5. AWWA C906, "Polyethylene Pressure Pipe for Water Distribution and Transmission."
- B. Alignment and grade:
 - 1. Lay pipe to the lines and grades established on the plans.
 - 2. Maintain a 10' horizontal separation from water main.
 - 3. Maintain an 18 inch minimum vertical separation from all utility crossings.
 - 4. When crossing water main, locate the force main below the water main. When the minimum separation cannot be met, locate the force main below the water main and position the force main section centered on the water main. Encase crossing in concrete.
- C. Earthwork:

Perform all trench excavation, pipe bedding and backfilling in accordance with Section 2200 - Earthwork.
- D. Pipe laying:
 - 1. Provide a minimum depth of cover, from the top of the pipe to the proposed finish grade, of 6 feet, unless noted otherwise on the plans.
 - 2. Center the pipe within the trench with adequate clearance between the pipe and the trench sidewalls.
 - 3. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate the joints.
 - 4. Thoroughly clean all foreign matter from the pipe and keep the pipe clean during the pipe laying operations by using temporary plugs.
 - 5. Pipe shall not be installed in trenches containing water or mud without the approval of the Engineer.
 - 6. All pipe ends shall be plugged with a water tight plug when construction stops for an extended period of time or overnight.
 - 7. Prevent plugged pipe from floating.
 - 8. Damage to linings and coatings shall be cause for rejection of the complete section of pipe.
 - 9. Place a detectable tape 24" above the top of pipe.

10. Tracer wire:
 - a. If PVC or HDPE piping is utilized, provide a tracer wire pipe location system approved by the Engineer along the water main to form a continuous conductor between access points.
 - b. Contractor will not be paid for water main installed without a continuous conductor.

- E. Joining pipe:
 1. Thoroughly clean & lubricate bell, spigot, and gaskets.
 2. Only joint lubricants approved by the pipe manufacture will be permitted.
 3. Align the pipe and push "Home" without damaging the joint.
 4. Conform to AWWA C600.

- F. Joint restraint:
 1. Install all manufactured restrained joints in conformance with the manufacturer's recommendations.
 2. Provide adequate joint restraint at all tees, plugs, caps, reducers, and bends deflecting $22\frac{1}{2}^{\circ}$ or more.
 3. Install only where indicated on the plans, in the specifications or where directed by the Engineer.
 4. Tie rods:
 - a. Install only where indicated on the plans, in the specifications or where directed by the Engineer.
 - b. Install where adequate earth backing is not available.
 5. Concrete thrust blocks:
 - a. Size and Shape: As shown on the plans.
 - b. Placing: Pour concrete only after all connections have been made.
 - c. Location: Thrust block shall extend from the fitting to the undisturbed earth of the trench wall. Keep block behind the bell of fitting.
 - d. Bracing: Support fittings and valves independently of the piping until the concrete has set.

3.02 SETTING VALVES

- A. Set and join valves as specified for pipe sections in paragraph 3.01.
- B. Set and firmly support valve boxes over the valve. Set the box centered and plumb over the valve operating nut. Set the box lid flush with the proposed finish grade.

3.03 FLUSHING

- A. General:
 1. All force main shall be flushed to remove dirt and foreign matter prior to connection to the existing sewer system.
 2. Water for flushing will be the sole responsibility of the Contractor.
 3. Water for flushing shall be from a source approved by the Engineer and the Michigan Department of Environment Great Lakes and Energy Drinking Water Division.
 4. If water is available from any existing water system, the Contractor shall comply with any requirements from the agency that controls the existing water system.
 5. All connections to existing water supplies shall be made with a Michigan Department of Environment Great Lakes and Energy approved backflow prevention device.

- B. Method:
 1. Flush force mains using a "poly-pig" supplied by the Contractor.
 2. Insert the "poly-pig" into the main at a location and using a method approved by the Engineer.

3. Retrieve the "poly-pig" at a temporary blow-off assembly constructed by the Contractor, at a location approved by the engineer.
4. Repeat the "poly-pigging" until all foreign matter is removed.

3.04 PRESSURE TESTING

A. General:

1. All force mains shall be tested.
2. Conduct all testing only while the engineer is present.
3. Notify Engineer at least 24 hours prior to testing.
4. All connections to existing potable water supplies shall be made with a backflow prevention device in accordance with State of Michigan Act 399 and all other applicable laws of the State of Michigan.
5. If any section of pipe fails to pass a test, the Contractor shall determine the source of the failure, repair it, and retest the section at no additional cost to the Owner.
6. The tests shall be repeated until satisfactory results are obtained.

B. Test preparation:

1. Maximum test section: 2000 feet or as approved by the Engineer.
2. Install temporary caps or pugs where necessary to test sections.
3. Brace and sufficiently backfill all parts of the pipeline to prevent movement of the pipe.
4. Water for testing shall be from a source approved by the engineer.
5. If water is available from any existing system, the contractor shall comply with any requirements from the agency that controls the existing water system.
6. Expel all air from the pipe prior to testing. If necessary to accomplish this, taps shall be made at the high points using corporation stops approved by the Engineer. No additional compensation will be made for taps of this type.

C. Testing force main:

1. Testing equipment:
 - a. Low flow-high pressure pump capable of producing 200 psi.
 - b. 0 to 200 psi gauge with minimum gradations of 10 psi.
 - c. Volume measuring device approved by the Engineer.
2. Test method:
 - a. Ductile Iron Pipe: AWWA C600
 - b. PVC Pipe: AWWA C605
 - (3) Begin two hour test
3. Test pressure: according to AWWA C605 at 75 psi or 2 times operating pressure, whichever is greater.
4. Allowable leakage: Defined as the amount of water that must be supplied into the pipe to maintain the test pressure of 150 psi to within ± 5 psi during the test period. Leakage shall not exceed the rates shown below:
 - a. 2 inch pipe: 0.36 gallons per 2 hour per 1000 feet of pipe.
 - b. 3 inch pipe: 0.55 gallons per 2 hour per 1000 feet of pipe.
 - c. 4 inch pipe: 0.66 gallons per 2 hour per 1000 feet of pipe.
 - d. 6 inch pipe: 0.99 gallons per 2 hour per 1000 feet of pipe.
 - e. 8 inch pipe: 1.32 gallons per 2 hour per 1000 feet of pipe.
 - f. 10 inch pipe: 1.66 gallons per 2 hour per 1000 feet of pipe.
 - g. 12 inch pipe: 1.99 gallons per 2 hour per 1000 feet of pipe.
5. Repair all visible leakage regardless of the amount.

D. Testing valves:

1. Test all valves in the closed position.
2. Apply a net test pressure of 125 psi for a period of 10 minutes.

3. A valve will be considered to have passed if after 10 minutes the pressure is within ± 2 psi of the net test pressure, and in the opinion of the Engineer, no appreciable amount of leakage takes place during the test period.
- E. PVC pipe:
1. Contractor shall demonstrate that the wire is continuous and unbroken through the entire run of the pipe.
 - a. Demonstration shall include full signal conductivity (including splices) when energizing for the entire run in the presence of the Owner or Engineer.
 - b. If the wire is broken, the Contractor shall repair or replace it. Pipeline installation will not be accepted until the wire passes a continuity test.

END OF SECTION

SECTION 02900
SITE RESTORATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Work necessary to restore all disturbed surfaces and facilities to equal or better condition.
 - 2. Provide, establish, and maintain seed, fertilizer, mulch, and erosion control materials.
- B. Related Sections
 - 01025 MEASUREMENT AND PAYMENT
 - 02200 EARTHWORK
 - 02270 EROSION CONTROL

1.02 UNIT PRICES

All work under this Section shall be considered incidental to the work unless specifically indicated on the BID SCHEDULE and referred to in Section 01025 MEASUREMENT AND PAYMENT.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Provide topsoil as specified in Section 02200 EARTHWORK.
- B. Seed: Provide seed mixture composed of the following proportion by weight:

Creeping Red Fescue	35%
Kentucky Blue Grass	15%
Perennial Rye Grass	50%
- C. Fertilizer:
 - 1. Provide chemical fertilizer with a 12-12-12 mixture of Nitrogen (N), Phosphoric Acid (P₂O₅), and Potash (K₂O).
 - 2. Provide net weight of contents and guaranteed analysis.
- D. Mulching: Provide straw, hay, or other material conforming to MDOT Specification 8.21.11, as approved by the Engineer.

PART 3 EXECUTION

3.01 TOPSOIL PREPARATION

- A. General:
 - 1. Prepare topsoil after finish grading of surfaces.
 - 2. Prepare soil to a friable condition by discing, harrowing, or otherwise loosening the soil to a depth of 3 inches.
 - 3. Break up all lumps of soil.
 - 4. Rake out all rocks and debris.

3.02 FERTILIZING

- A. Apply evenly on the prepared surface at a rate of 240 pounds per acre.
- B. Drill or broadcast method, placed no deeper than 1 inch.

3.03 SOWING

- A. Sow grass at a minimum rate of 100 pounds per acre.
- B. Method:
 - 1. Sow the seed following or in conjunction with the fertilizer.
 - 2. Sow only while soil is in a friable condition.
 - 3. Do not sow through mulch.
 - 4. Sow seed mixture by drill or broadcast method.
 - 5. Float seed sown by broadcast method so that 50% of the seed is mixed with the top 2 inch of the soil.
- C. Hydroseeding:
 - 1. Apply seed, fertilizer, and mulch in one application.
 - 2. Mulch shall be a wood fiber material.
 - 3. Apply at a rate of 1440 pounds per acre.
- D. Watering:
 - 1. Water all seeded areas to establish a smooth and full vegetative cover.
 - 2. Should erosion occur or the seed not grow within the guarantee period, regrade and reseed the disturbed area at no additional cost.
- E. Erosion control:
 - 1. Provide measures necessary to establish well rooted vegetation on slopes and ditch bottoms.
 - 2. Protect seeded slopes with netted mulch blankets or other suitable methods.
- F. Seasonal limitations:
 - 1. Apply seed between May 1 and October 1.
 - 2. Dormant seeding:
 - a. Permitted in limited areas to complete a project.
 - b. Apply after November 1, but not on frozen ground.

3.04 MULCHING

- A. Apply at a rate of 2 bales per 1000 square feet.
- B. Method:
 - 1. Apply immediately after seeding.
 - 2. Apply evenly and loose enough to allow sunlight and air to penetrate, but thick enough to reduce the rate of evaporation and erosion.
 - 3. Apply mulch adhesive as necessary at a rate of 150 gallons per acre.

END OF SECTION

ABANDONMENT OF WATER MAINS

SECTION 33 11 00.19

ABANDONMENT OF WATER MAINS

PART 1: GENERAL

1.01 SUMMARY

- A. This work consists of abandonment in place, by cutting and capping, of existing water mains, hydrants, service lines, and valves.
- B. This work also consists of abandonment in place of water mains using flowable fill. Flowable fill will be utilized when abandoning water mains underneath roadways and paved areas, and at the direction of the Engineer as field conditions dictate, or as specified on the Drawings.

1.02 SUBMITTALS

- A. Related sections:
 - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE
 - 2. Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
 - 3. Section 31 00 00 EARTHWORK
- B. Submit product data for proposed plugs and clamps for approval.
- C. Submit technical information for equipment and operational procedures including projected slurry injection rate, grout pressure, method of controlling grout pressure, bulkhead and vent design, and number of stages of grout application.
- D. At least fifteen (15) days prior to commencing flowable fill abandonment activities, submit plan for abandonment describing proposed grouting sequence and other information pertinent to completion of the Work.

PART 2: PRODUCTS

2.01 GENERAL MATERIALS

- A. Concrete thrust blocks shall be minimum 3,000 psi concrete conforming to requirements of SECTION 03 30 53 MISCELLANEOUS CAST IN PLACE CONCRETE.
- B. Plugs and clamps shall be applicable for the type of pipe to be plugged.

2.02 FLOWABLE FILL REQUIREMENTS

- A. Unconfined compressive strength shall be a minimum of 75 psi and a maximum of 150 psi at 56 days as determined based on an average of three tests for the same placement. Present at least three acceptable strength tests for the proposed mix design in the mix design report.
- B. Placement characteristics shall be self-leveling.
- C. Shrinkage characteristics shall be non-shrink.

ABANDONMENT OF WATER MAINS

- D. Water bleeding for fill to be placed by grouting method in sewers shall not exceed 2 percent according to ASTM C940.
- E. Minimum wet density shall be 90 pounds per cubic foot.

2.03 BALLAST

- A. Ballast material shall be natural rock or concrete pieces with minimum size equal to at least ten (10) times the maximum aggregate size of flowable fill and maximum size of twenty-four (24) inches. Maximum dimension shall not be more than twenty (20) percent of minimum dimension of space to be filled.
- B. Ballast composition shall be free of regulated waste material.

PART 3 EXECUTION

3.01 DEMOLITION OF FIRE HYDRANTS, VALVES, AND PIPELINE STRUCTURES PRIOR TO ABANDONMENT

- A. Remove all water main appurtenances such as hydrants, valves, and valve boxes. Appurtenances shall be returned to the DPW for future use.
- B. Demolish and remove precast concrete adjustment rings, concrete vaults and covers, or other pipeline structures to a minimum depth of four (4) feet below finished grade. Structures may be removed to greater depth, but not deeper than eighteen (18) inches above the crown of the abandoned water main. Poke holes in floor prior to filling.
- C. Until a fire hydrant is physically removed, any hydrant that becomes non-usable during abandonment procedures shall have a heavy-duty cover placed over it, secured, and marked "Abandoned" so that fire department personnel know its status.

3.02 CUTTING AND CAPPING OF MAINS

- A. Do not begin cut, plug, and abandonment operations until replacement water main has been constructed and tested, all service connections have been installed, and replacement main is approved for use.
- B. Install plug, clamp, and concrete reaction block and make cut at the water main and/or at the location shown on the Drawings.
- C. Main to be abandoned shall not be valved off and shall not be cut or plugged other than as shown on the Drawings.
- D. After the main to be abandoned has been cut and capped, check for other sources feeding the abandoned water main. When sources are found, notify the Engineer immediately. Cut and cap abandoned main at the point of other feed as directed by the Engineer.
- E. Plug or cap ends or openings in abandoned main in a manner approved by the Engineer. Install concrete around cap and over pipe to ensure it is not penetrable by groundwater.
- F. Backfill excavations in accordance with Section – 31 00 00 - EARTHWORK.

ABANDONMENT OF WATER MAINS

- G. Repair street surfaces in accordance with the specifications.
- H. Mark location of abandoned water service laterals on Drawings and provide to the Engineer.

3.03 CUTTING AND CAPPING OF WATER SERVICES

- A. Do not begin cut, plug, and abandonment operations until replacement service, if necessary, has been constructed and tested and all service connections have been installed.
- B. Service lines shall be cut and capped at the water main and/or as directed by the Engineer.
- C. Before backfilling of a capped service line is started, the capping must be observed by a representative of the OWNER.
- D. After service to be abandoned has been cut and capped, check for any other sources feeding the abandoned water service. When sources are found, notify the Engineer immediately. Cut and cap abandoned service at point of other feed as directed by the Engineer.
- E. Plug or cap ends or openings in abandoned service in a manner approved by the Engineer. Install concrete around cap and over pipe to ensure it is not penetrable by groundwater.
- F. Remove all water service surface identifications and appurtenances such as valves and valve boxes, meters, and backflow devices. Return appurtenances to the DPW.
- G. Backfill excavations in accordance with Section 31 00 00 - EARTHWORK.
- H. Repair paved surfaces in accordance with the specifications.
- I. Mark location of abandoned water services on Drawings and provide to the Engineer.

3.04 PREPARATION FOR ABANDONMENT VIA FLOWABLE FILL

- A. Have fill mix design reports and other required submittals accepted by the Engineer prior to start of placement. Notify the Engineer at least twenty-four (24) hours in advance of grouting with flowable fill.
- B. Select fill placement equipment and follow procedures with sufficient safety and care to avoid damage to existing underground utilities and structures. Operate equipment at pressure that will not distort or imperil portions of work, new or existing.
- C. Clean water lines and video with closed circuit television to identify connections, locate obstructions, and assess condition of pipe. Locate previously unidentified connections which have not been redirected and reconnected as part of the Work and report them to the Engineer. During placement of fill, compensate for irregularities in water pipe such as obstructions, open joints, or broken pipe to ensure no voids remain unfilled.
- D. Perform demolition work prior to starting fill placement. Clean placement areas of water mains of debris that may hinder fill placement. Remove excessive amounts of

ABANDONMENT OF WATER MAINS

tuberculations and other substances that may degrade performance of fill. Do not leave debris in place if filling more than two (2) percent of placement volume.

- E. Remove free water prior to starting fill placement.

3.05 EQUIPMENT FOR ABANDONMENT VIA FLOWABLE FILL

- A. Mix flowable fill in automated batch plant and deliver to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design.
- B. Use concrete or grout pumps capable of continuous delivery at planned placement rate.

3.06 INSTALLATION OF FLOWABLE FILL

- A. Abandon existing water lines underneath roadways, paved areas, and other required locations by completely filling water mains with flowable fill.
- B. Place flowable fill to fill volume between abandonment points. Continuously place flowable fill with no intermediate pour points, but not exceeding five hundred (500) feet in length.
- C. Have filling operation performed by experienced crews with equipment to monitor density of flowable fill and to control pressure.
- D. Pump flowable fill through bulkheads constructed for placement of two (2) two-inch PVC pipes or use other suitable construction methods to contain flowable fill in lines to be abandoned. These pipes will act as injection points or vents.
- E. Place flowable fill under pressure flow conditions into properly vented open system until flowable fill emerges from vent pipes. Pump flowable fill with sufficient pressure to overcome friction and to fill water main from downstream end to discharge at upstream end.
- F. Inject flowable fill through replaced ballast using grouting equipment and a series of grout pipes discharging at bottom of placement allowing fill to rise through ballast effectively filling all voids. Alternatively, sequentially place individual pieces of ballast at same time as flowable fill is placed. Do not fill with ballast more than fifty (50) percent of volume at any level.
- G. Remediate placement of flowable fill where voids develop due to excessive shrinkage or bleeding by pressure grouting either from inside water main or from surface.
- H. Plug each end of the water main being abandoned.
- I. Backfill to surface above pipe left in place and compact in compliance with Section – Excavation and Backfill for Utilities.
- J. Collect and dispose of excess flowable fill material and debris as directed by the Engineer.

3.07 PROTECTION OF PERSONS AND PROPERTY

ABONDONMENT OF WATER MAINS

- A. Provide safe working conditions as required by OSHA and applicable State and local laws. Observe safety requirements for work below grade.
- B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks, or passageways.

3.08 ASBESTOS CONCRETE PIPE

- A. Any work involving or impacting asbestos concrete pipe must be in accordance with the EPA document titled "Demolition Practices Under the Asbestos NESHAP."

END OF SECTION

ABANDONMENT OF SEWER MAINS

SECTION 33 31 00.13

ABANDONMENT OF SEWER MAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Abandonment in place, by cutting and capping, of existing sewers, junction structures, manholes, service lines, and force mains.
- B. Abandonment in place of existing sewers and force mains using flowable fill. Flowable fill will be utilized when abandoning existing sewers and force mains underneath roadways and paved areas and at the direction of the Engineer as field conditions dictate, or as specified on the Drawings.

1.02 SUBMITTALS

- A. Related sections:
 - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE
 - 2. Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
 - 3. Section 31 00 00 EARTHWORK
- B. Submit product data for proposed plugs for approval.
- C. Technical information for equipment and operational procedures including projected slurry injection rate, grout pressure, method of controlling grout pressure, bulkhead and vent design, and number of stages of grout application.
- D. At least 15 days prior to commencing abandonment activities, submit plan for abandonment, describing proposed grouting sequence, bypass pumping requirements and plugging, if any, and other information pertinent to completion of work.

PART 2 PRODUCTS

2.01 PLUGS

- A. Grout Plugs: Cement-based dry-pack grout conforming to ASTM C1107, Grade B or C.
- B. Manufactured Plug: Commercially available plug or cap specifically designed and manufactured to be used with pipe being abandoned.

2.02 FLOWABLE FILL REQUIREMENTS

- A. Unconfined compressive strength: minimum 75 psi and maximum 150 psi at 56 days as determined based on an average of three tests for same placement. Present at least three acceptable strength tests for proposed mix design in mix design report.
- B. Placement characteristics: self-leveling.
- C. Shrinkage characteristics: non-shrink.

ABANDONMENT OF SEWER MAINS

- D. Water bleeding for fill to be placed by grouting method in sewers: not to exceed 2 percent according to ASTM C940.
- E. Minimum wet density: 90 pounds per cubic foot.

2.03 BALLAST

- A. Ballast Material: Natural rock or concrete pieces with minimum size equal to at least 10 times maximum aggregate size of flowable fill and maximum size of 24 inches. Maximum dimension shall not be more than 20 percent of minimum dimension of space to be filled.
- B. Ballast Composition: Free of regulated waste material.

PART 3 EXECUTION

3.01 DEMOLITION OF SEWER MANHOLES, PIPELINE STRUCTURES, AND FORCE MAINS PRIOR TO ABANDONMENT

- A. Remove manhole frames and covers and castings from other existing pipeline structures. Deliver castings to nearest DPW maintenance facility for future use. Alternatively, salvaged castings may be used upon approval by the Engineer, for constructing new manholes on this project.
- B. Demolish and remove precast concrete adjustment rings and corbel section, or brick and mortar corbel and chimney, or other pipeline structures, to minimum depth of 4 feet below finished grade. Structure may be removed to greater depth, but not deeper than 18 inches above crown of abandoned sewer.
- C. Drain manholes and poke holes in manhole floors and walls prior to filling.
- D. When adjacent sewer lines are not to be filled, place temporary plugs in each line connecting to manhole, in preparation for filling manhole.
- E. Excavate overburden from force mains to be abandoned at locations indicated on Drawings, conforming to the specification section for Excavation and Backfill for Utilities. Cut existing force main, when necessary, to provide an end surface perpendicular to axis of pipe and suitable for plug to be installed. Remove force main piping material remaining outside of segment to be abandoned.

3.02 CUTTING AND CAPPING OF MAINS

- A. Do not begin cut, plug, and abandonment operations until replacement sewer or force main has been constructed and tested, all service connections have been installed, and main has been approved for use.
- B. Install plug, clamp, and concrete thrust block and make cut at location shown on Drawings and/or as directed by Engineer.
- C. Main to be abandoned shall not be valved off and shall not be cut or plugged other than as shown on Drawings.

ABANDONMENT OF SEWER MAINS

- D. After main to be abandoned has been cut and capped, check for other sources feeding abandoned sewer main. When sources are found, notify Engineer immediately. Cut and cap abandoned main at point of other feed as directed by Engineer.
- E. Plug or cap ends or opening in abandoned main in manner approved by Engineer. Install concrete around cap and over pipe to ensure it is not penetrable by groundwater.
- F. Remove and dispose of surface identifications such as cleanouts. Clean-outs in improved streets shall be filled with concrete.
- G. Backfill excavations in accordance with Section 31 00 00 EARTHWORK.
- H. Repair street surfaces in accordance with specifications.
- I. Mark location of abandoned sewer laterals on Drawings and provide to the Engineer.

3.03 CUTTING AND CAPPING OF SERVICES

- A. Do not begin cut, plug, and abandonment operations until replacement service, if necessary, has been constructed and tested, and all service connections have been installed.
- B. Service lines shall be cut and capped at the sewer main and/or as directed by Engineer.
- C. Before backfilling of a capped service line is started, the capping must be observed by a representative of the DPW.
- D. After service to be abandoned has been cut and capped, check for any other sources feeding abandoned sewer service. When sources are found, notify Engineer immediately. Cut and cap abandoned main at point of other feed as directed by Engineer.
- E. Plug or cap ends or opening in abandoned service in manner approved by Engineer. Install concrete around cap and over pipe to ensure it is not penetrable by groundwater.
- F. Remove and dispose of surface identifications such as cleanouts. Cleanouts in improved streets shall be filled with concrete.
- G. Backfill excavations in accordance with Section 31 00 00 EARTHWORK.
- H. Repair paved surfaces in accordance with specifications.
- I. Mark location of abandoned sewer laterals on Drawings and provide to DPW.

3.04 ABANDONMENT OF FORCE MAINS

- A. Do not begin cut, plug, and abandonment operations until replacement force main has been constructed and tested, and all service connections have been installed.
- B. Install plug, clamp, and concrete thrust block and make cut at location shown on Drawings.
- C. Main to be abandoned shall not be valved off and shall not be cut or plugged other than as shown on Drawings.

ABANDONMENT OF SEWER MAINS

- D. After force main to be abandoned has been cut and plugged, check for other sources feeding abandoned force main. When sources are found, notify the Engineer immediately. Cut and plug abandoned force main at point of other feed as directed by Engineer.
- E. Plug or cap ends or openings in abandoned force main in manner approved by the Engineer.
- F. Remove surface identifications and appurtenances such as valve boxes.
- G. Backfill excavations in accordance with Section 31 00 00 EARTHWORK.
- H. Repair street surfaces in accordance with the specifications.

3.05 PREPARATION FOR ABANDONMENT VIA FLOWABLE FILL

- A. Have fill mix design reports and other submittals required by Paragraph 2.02 accepted by the Engineer prior to start of placement. Notify the Engineer at least 24 hours in advance of grouting with flowable fill.
- B. Select fill placement equipment and follow procedures with sufficient safety and care to avoid damage to existing underground utilities and structures. Operate equipment at pressure that will not distort or imperil portion of work, new or existing.
- C. Clean sewer lines and video with closed circuit television to identify connections, locate obstructions, and assess condition of pipe. Locate previously unidentified connections, which have not been redirected and reconnected as part of this project, and report them to the Engineer. During placement of fill, compensate for irregularities in sewer pipe, such as obstructions, open joints, or broken pipe to ensure no voids remain unfilled.
- D. Perform demolition work prior to starting fill placement. Clean placement areas of sewers and manholes of debris that may hinder fill placement. Remove excessive amounts of sludge and other substances that may degrade performance of fill. Do not leave sludge or other debris in place if filling more than 2 percent of placement volume.
- E. Remove free water prior to starting fill placement.

3.06 EQUIPMENT FOR FLOWABLE FILL

- A. Mix flowable fill in automated batch plant and deliver it to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design.
- B. Use concrete or grout pumps capable of continuous delivery at planned placement rate.

3.07 INSTALLATION OF FLOWABLE FILL

- A. Abandon existing sewer lines and force mains underneath roadways and paved areas by completely filling sewer line with flowable fill. Abandon manholes and other structures by filling with flowable fill, together with ballast as applicable, within depth of structures left in place.
- B. Manholes located in non-paved areas may be filled with soil or acceptable fill and compacted as directed by Engineer.

ABANDONMENT OF SEWER MAINS

- C. Place flowable fill to fill volume between manholes. Continuously place flowable fill from manhole to manhole with no intermediate pour points, but not exceeding 500 feet in length.
- D. Have filling operation performed by experienced crews with equipment to monitor density of flowable fill and to control pressure.
- E. Temporarily plug sewer lines which are to remain in operation during pouring/pumping to keep lines free of flowable fill.
- F. Pump flowable fill through bulkheads constructed for placement of two 2-inch PVC pipes or use other suitable construction methods to contain flowable fill in lines to be abandoned. These pipes will act as injection points or vents for placement of flowable fill.
- G. Place flowable fill under pressure flow conditions into properly vented open system until flowable fill emerges from vent pipes. Pump flowable fill with sufficient pressure to overcome friction and to fill sewer from downstream end, to discharge at upstream end.
- H. Inject flowable fill through replaced ballast using grouting equipment and series of grout pipes discharging at bottom of placement, allowing fill to rise through ballast effectively filling all voids. Alternatively, sequentially place individual pieces of ballast at same time as flowable fill is placed. Do not fill with ballast more than 50 percent of volume at any level, to prevent nesting and void formation.
- I. Remediate placement of flowable fill which does not fill voids in sewer, in force main, and in manhole or other structures, or where voids develop due to excessive shrinkage or bleeding of fill, by using pressure grouting either from inside sewer or from surface.
- J. Plug each end of force main being abandoned, if not filled with flowable fill.
- K. Clean inside surface of force main at least 12 inches from ends to achieve firm bond and seal grout plug or manufactured plug to pipe surface. Similarly, clean and prepare exterior pipe surface if manufactured cap is to be used.
- L. When using manufactured plug or cap, install fitting as recommended by manufacture's instructions, to form water tight seal.
- M. Backfill to surface, above pipe or structures left in place, with flowable fill in restricted areas, compacted bank run sand in unrestricted areas to be paved or select fill in unrestricted areas outside of pavement. Place and compact backfill, other than flowable fill, in compliance with Section 31 00 00 EARTHWORK.
- N. Collect and dispose of excess flowable fill material and other debris in accordance with local requirements or as directed by the Engineer.

3.08 PROTECTION OF PERSONS AND PROPERTY

- A. Provide safe working conditions as required by OSHA and applicable State and local laws for employees throughout demolition and removal operations. Observe safety requirements for work below grade.

ABONDONMENT OF SEWER MAINS

- B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks or passageways adjacent to Work.

END OF SECTION

APPENDIX A
WATER AND SEWER
SERVICE SCHEDULE

DRESDEN STREET - WATER AND SEWER SERVICE SCHEDULE

Item No.	Address	Water Service	Sewer Service
1	109 N BIRCH	2-INCH COPPER	
2	711 W DRESDEN	1-INCH COPPER	6-INCH PVC
3	709 W DRESDEN	1-INCH COPPER	6-INCH PVC
4	707 W DRESDEN	1-INCH COPPER	6-INCH PVC
5	705 W DRESDEN	1-INCH COPPER	6-INCH PVC
6	104 S BIRCH	1-INCH COPPER	6-INCH PVC

APPENDIX B
SOIL BORING LOGS

SOIL CLASSIFICATION INFORMATION

SOIL DESCRIPTIONS

Example: Silty fine SAND (SM) - trace clay - occasional clay seams - dense - brown/gray below 40 feet - wet
(1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10)

- 1a FOR COARSE GRAINED PRIMARY MATERIAL: Secondary Material of 15 to 50%, if applicable. (eg. Silty, Clayey)
- 1b FOR FINE GRAINED PRIMARY MATERIAL: Secondary Material of 30 to 50%, if applicable (eg. Gravelly, Sandy)
- 2 PRIMARY MATERIAL (in CAPs)- SILT, SAND, GRAVEL, or CLAY
Note: fine, medium and/or coarse grained SAND
fine and/or coarse grained GRAVEL
- 3 (USCS) Unified Soil Classification System (USCS) symbol(s) is presented at the end of the soil description (in parentheses) based on ASTM gradation and plasticity testing. See attached USCS chart.
- 4 Additional Materials (with percentage descriptors as below)

Fine Grained Material	Coarse-Grained Material
15 to 30% - "some" or "with"	5 to 15% - "little"
5 to 15% - "little"	< 5% - "trace" or "few"
< 5% - "trace" or "few"	
- 5 Description of sorting or grading. For example, "well-sorted, or "poorly graded."
- 6 Occurrences (with frequency descriptors as below) - cobbles, boulders, bricks, layers, seams, etc.
Greater than one per 12-inches = "frequent"
One per 12-inches = "occasional"

Note: Seams = < 1-inch in thickness
Layers = > 1-inch in thickness
- 7 Angularity and mineral composition, if warranted
- 8 Odor or Sheen, if applicable
- 9 Soil Strength Description (Relative Density for gravel, sand and silt, or Consistency for clay)
- 10 Color
- 11 Moisture - "dry" or "wet" or "moist"
"dry" = absence of apparent moisture
"moist" = damp but not saturated
"wet" = saturated

Particle Sizes		Relative Density		Consistency		
Boulders	- > 12-in		SPT N-Value	SPT N-Value	Ppen, tsf	
Cobbles	- 12 to 3 in	"very loose"	W.O.H. to 4	"very soft"	WOH to 2	0 - 0.125
Course gravel	- 3 to 3/4 in	"loose"	5 to 10	"soft"	2 to 4	0.125 - 0.25
Fine gravel	- 3/4 to 0.187-in	"medium dense"	11 to 30	"medium stiff"	4 to 8	0.25 - 0.5
Coarse sand	- 4.75 to 2.0-mm	"dense"	31 to 50	"stiff"	8 to 15	0.5 - 1.0
Medium sand	- 2.0 to 0.425-mm	"very dense"	over 50	"very stiff"	15 to 30	1.0 - 2.0
Fine sand	- 0.425 to 0.075-mm			"hard"	over 30	2.0 - 4.0
Clay/Silt	- < 0.075-mm					

NOTES AND GENERAL INFORMATION

- Drilling and sampling activities are indicative of subsurface conditions only at locations where data are taken, and when data are taken. Conditions at locations not evaluated may differ from professional interpretation.
- Environmental boring logs present soil and groundwater data collected for resource development, depositional environment, groundwater flow and/or contaminant transport analyses and may not be suited for geotechnical or structural engineering use unless otherwise arranged.
- Stratigraphic Contacts:
 - Solid line denotes a sudden, observed soil transition.
 - Dashed line denotes a gradual or gradational soil transition.
 - Dotted line denotes an inferred transition, therefore the type and specific location of the transition is unknown / approximated.
- Common abbreviations:

WOH = Weight of (SPT) Hammer	DHH = Down Hole Hammer	HA = Hand Auger
DR = Drove Rock (During SPT)	NR = No Recovery	
Ppen = Pocket Penetrometer (unconfined compressive strength in tons per square foot)		



Gosling Czubak

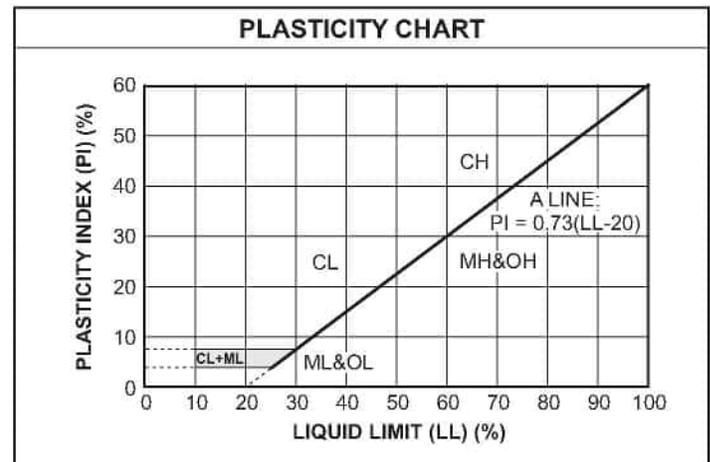
engineering sciences, inc.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA		
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
 More than 12 percent GM, GC, SM, SC
 5 to 12 percent Borderline cases requiring dual symbols





PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** M. Allen

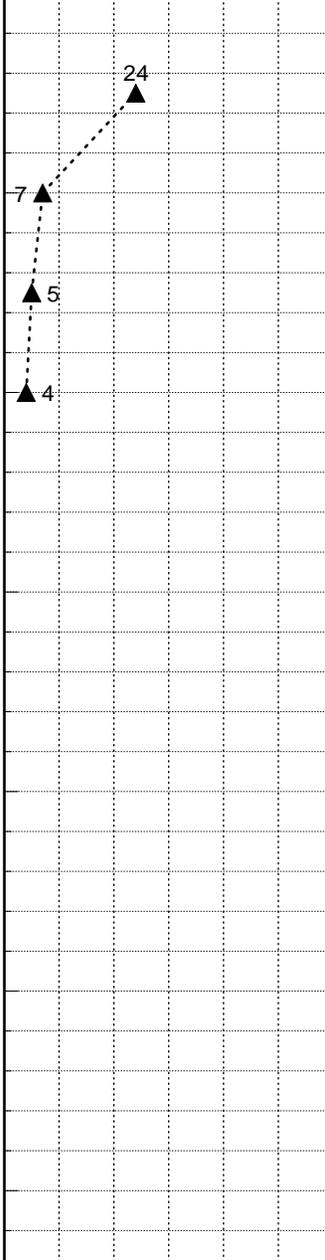
LOG OF BORING: SB-1

GROUND ELEVATION: 1033.4 **DATE:** 3/2/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8.5

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (feet)	Graphic	Soil Description (See Boring Log Key)	Depth (feet)	Sample Type	Sample No.	Recovery (in)	Blow Counts	Notes	Pocket Penetrometer (tsf)	TEST RESULTS	
										Plastic Limit Water Content - %	Liquid Limit %
		ASPHALT PAVEMENT	0								
		ASPHALT SUB-BASE	0.25								
1030		Fine to medium SAND (SP-SM) - little silt - loose - brown	1	SS1	18	6 11 13					
			5	SS2	18	3 4 3					
1025		Fine to medium SAND (SP-SM) - trace coarse sand - little silt - occasional gravel - loose - brown	6	SS3	18	2 2 3					
			10	SS4	18	5 2 2					
		Boring terminated at 10 ft.									

Plastic Limit |—| Liquid Limit
Water Content - × %
SPT RESULT - ▲ N Value
10 20 30 40 50



Borehole was backfilled using soil cuttings



PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** M. Allen

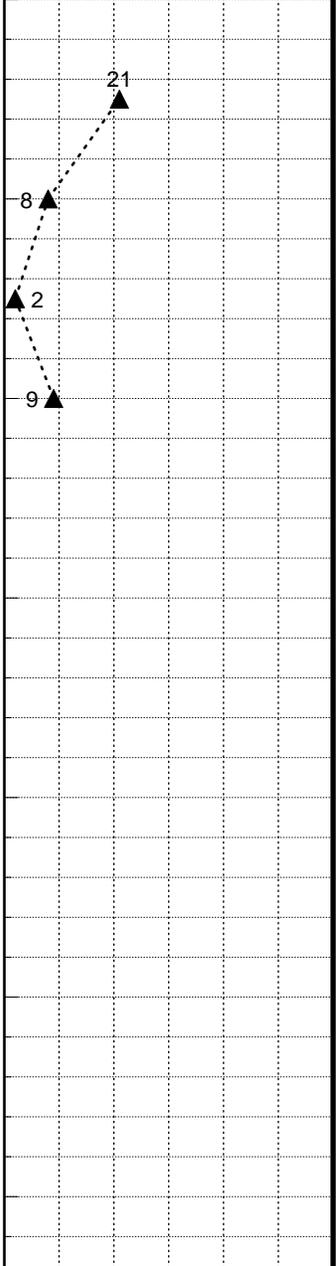
LOG OF BORING: SB-2

GROUND ELEVATION: 1033.0 **DATE:** 3/2/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (feet)	Graphic	Soil Description (See Boring Log Key)	Depth (feet)	Sample Type	Sample No.	Recovery (in)	Blow Counts	Notes	Pocket Penetrometer (tsf)	% < #200	TEST RESULTS	
											Plastic Limit Water Content -	Liquid Limit %
1033.0		ASPHALT PAVEMENT	0									
1030.0		ASPHALT SUB-BASE	0.25									
1030.0		Fine to medium SAND (SP-SM) - trace coarse sand - little silt - occasional gravel - loose - brown	1	SS1	18	6 9 12						
			5	SS2	18	3 4 4						
				SS3	18	2 1 1						
				SS4	18	3 4 5						
1025.0			Boring terminated at 10 ft.	10								

Plastic Limit |—| Liquid Limit
Water Content - × %
SPT RESULT - ▲ N Value
10 20 30 40 50



Borehole was backfilled using soil cuttings



PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** M. Allen

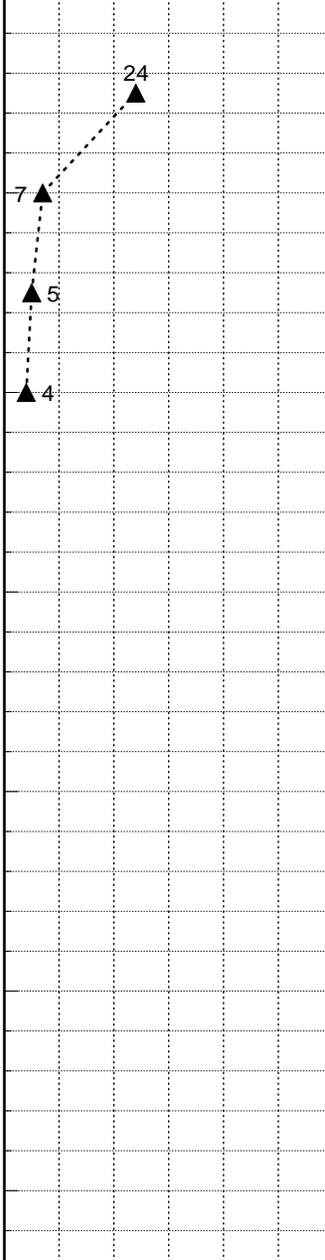
LOG OF BORING: SB-3

GROUND ELEVATION: 1032.4 **DATE:** 3/2/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8.5

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (feet)	Graphic	Soil Description (See Boring Log Key)	Depth (feet)	Sample Type	Sample No.	Recovery (in)	Blow Counts	Notes	Pocket Penetrometer (tsf)	% < #200	TEST RESULTS	
											Plastic Limit Water Content -	Liquid Limit %
1032.4		ASPHALT PAVEMENT	0									
1030		ASPHALT SUB-BASE	0.25									
1025		Fine to medium SAND (SP-SM) - trace coarse sand - little silt - loose - brown	1	SS1	18	5	11					
							13					
			5	SS2	18	3	4					
							3					
							3					
				SS3	18	2	2					
							3					
							2					
							2					
				SS4	18	2	2					
							2					
							2					
		Boring terminated at 10 ft.	10									

Plastic Limit |—| Liquid Limit
Water Content - × %
SPT RESULT - ▲ N Value
10 20 30 40 50



Borehole was backfilled using soil cuttings



PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** M. Allen

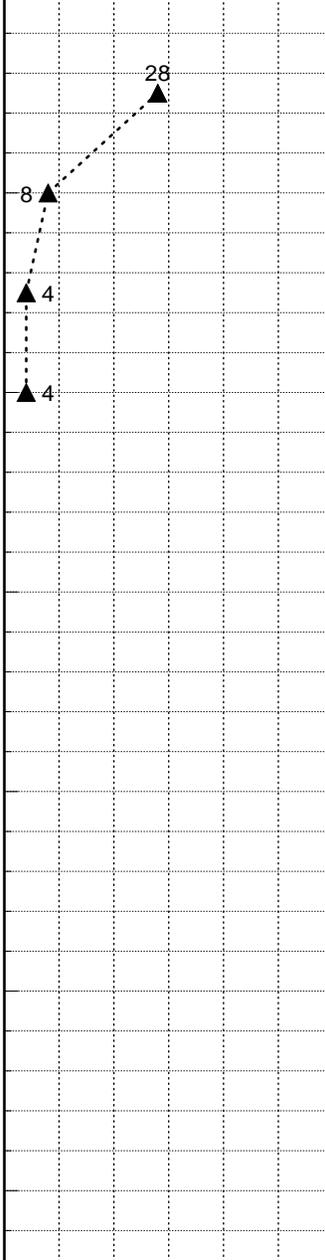
LOG OF BORING: SB-4

GROUND ELEVATION: 1031.5 **DATE:** 3/2/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (feet)	Graphic	Soil Description (See Boring Log Key)	Depth (feet)	Sample Type	Sample No.	Recovery (in)	Blow Counts	Notes	Pocket Penetrometer (tsf)	% < #200	TEST RESULTS	
											Plastic Limit Water Content -	Liquid Limit %
1030		ASPHALT PAVEMENT	0									
1030		ASPHALT SUB-BASE	0.25		SS1	18	4 13 15					
1025		Fine to medium SAND (SP-SM) - trace coarse sand - little silt - loose - brown	1		SS2	18	2 4 4				8	
1025			5		SS3	18	1 2 2				4	
1020		Boring terminated at 10 ft.	10		SS4	18	1 2 2				4	

Plastic Limit |—| Liquid Limit
Water Content - × %
SPT RESULT - ▲ N Value
10 20 30 40 50



Borehole was backfilled using soil cuttings

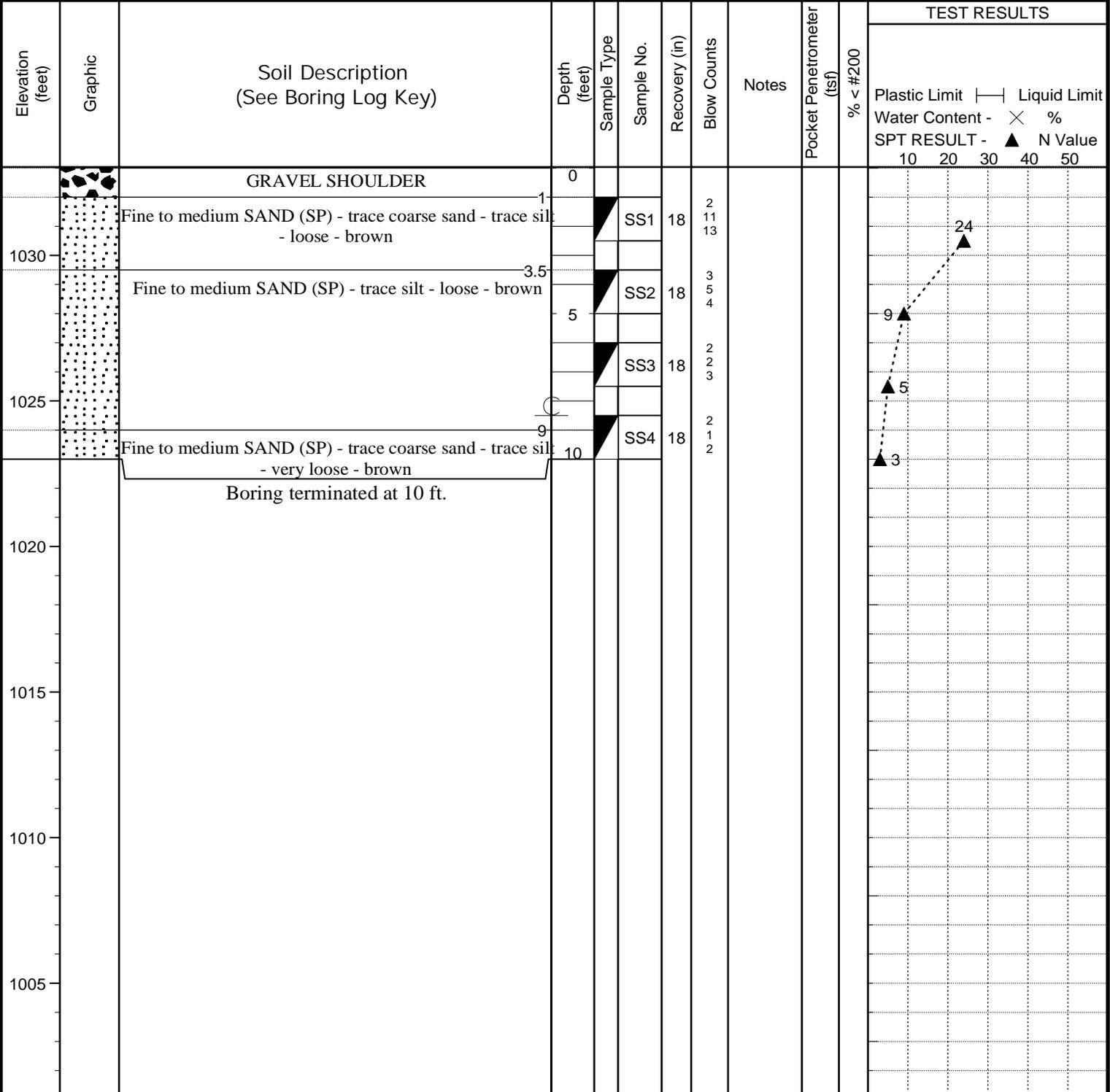


PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** A. Williams

LOG OF BORING: SB-5

GROUND ELEVATION: 1033 **DATE:** 3/16/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8.5

This information pertains only to this boring and should not be interpreted as being indicative of the site.



Borehole was backfilled using soil cuttings
Ground surface elevation estimated using Gosling Czubak topo data.



PROJECT: Dresden Street Sewer Improvements
PROJECT NO.: 2022222002.01
PROJECT LOCATION: Kalkaska, Michigan
CLIENT: Village of Kalkaska
DRILLING COMPANY: Gosling Czubak **RIG:** CME-55LC
DRILLER: R. Farve **LOGGED BY:** A. Williams

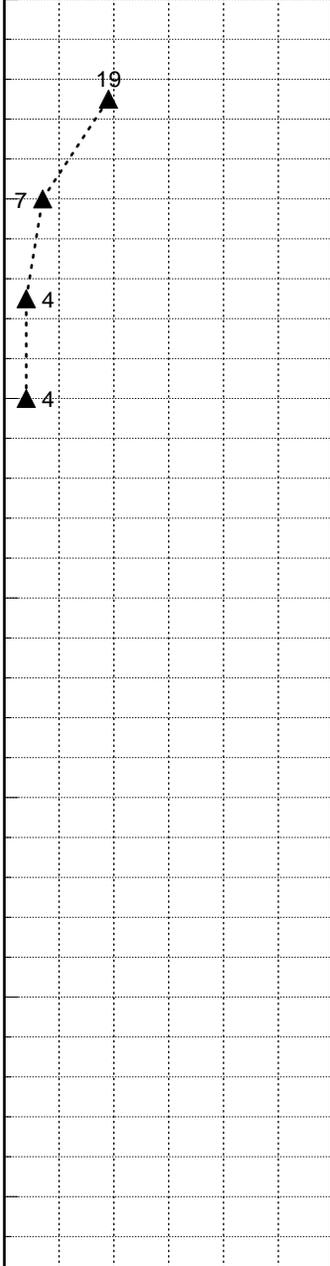
LOG OF BORING: SB-6

GROUND ELEVATION: 1028 **DATE:** 3/16/2022
DRILLING LOCATION: As shown on Soil Boring Location Sketch
DRILLING METHOD: 3.75" (ID) Hollow-Stem Auger
BOREHOLE DIAMETER (IN): +/- 8 in **TOTAL DEPTH (FT):** 10
STATIC WATER LEVEL: NA **CAVING DEPTH:** C 8.5

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (feet)	Graphic	Soil Description (See Boring Log Key)	Depth (feet)	Sample Type	Sample No.	Recovery (in)	Blow Counts	Notes	Pocket Penetrometer (tsf)	% < #200	TEST RESULTS	
											Plastic Limit Water Content -	Liquid Limit %
		ASPHALT PAVEMENT	0									
		ASPHALT SUB-BASE	0.25									
1025		Fine to medium SAND (SP-SM) - little silt - loose - brown	1	SS1	18		3 9 10					
		Fine to medium SAND (SP-SM) - little silt - trace coarse sand - loose to very loose - brown	3.5	SS2	18		2 4 3					
1020			5	SS3	18		2 2 2					
			10	SS4	18		2 2 2					
		Boring terminated at 10 ft.										

Plastic Limit |—| Liquid Limit
Water Content - × %
SPT RESULT - ▲ N Value
10 20 30 40 50



Borehole was backfilled using soil cuttings
Ground surface elevation estimated using Gosling Czubak topo data.