

# Contract Documents and Technical Specifications

Mitchell Dr. Water and Sewer Improvements  
Project

Village of Elk Rapids MI

WSSN: 02090

**Owner:**

Elk Rapids

315 Bridge Street

Elk Rapids, MI 49629

**Engineer:**

Gosling Czubak Engineering Sciences, Inc.

1280 Business Park Drive

Traverse City, Michigan

(231) 946-9191

[www.goslingczubak.com](http://www.goslingczubak.com)

June 28, 2024

GCES Project # 2021150002

CIVIL ENGINEERING

SURVEYING

ENVIRONMENTAL SERVICES

CONSTRUCTION SERVICES

GEOTECHNICAL

DRILLING

LANDSCAPE ARCHITECTURE

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\*Must be submitted with BID

VILLAGE OF ELK RAPIDS  
MITCHELL DRIVE WATER AND SEWER IMPROVEMENTS

ADVERTISEMENT FOR BIDS

Sealed Bids for the construction of the Village of Elk Rapids Mitchell Drive Water and Sewer Improvements Project will be received, by the Village of Elk Rapids, at the office of the Village of Elk Rapids, 315 Bridge Street, Elk Rapids, Michigan until 2:00 pm local time on July 26, 2024 at which time the Bids received will be publicly opened and read. The Project consists of; the installation of 1,563 LF of 6-inch water main, valves, services, connection to existing main and abandonment of existing water. Installation of 231 LF of 1.5-inch and 1,423 LF of 3-inch force main, valves, services, connection to existing main and abandonment of existing services, temporary sewer service, paving and restoration.

Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis, with alternate bid items as indicated on the Bid Form.

The Issuing Office for the Bidding Documents is: Gosling Czubak Engineering Sciences, Inc., 1280 Business Park Drive, Traverse City, MI 49686, (231) 946-9191. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 9:00 am – 4:00 pm, and may obtain copies of the Bidding Documents from the Issuing Office as described below. Bidding Documents also may be examined at Builders Exchange of Northwest Michigan website, 1373 Barlow St., Suite #4, Traverse City, MI, and the office of Village of Elk Rapids, 315 Bridge Street P.O. Box 398, Elk Rapids MI 49629, on Mondays through Fridays between the hours of 8:00 am to 5:00 pm. Builder's Exchanges are authorized to share the contract documents with other exchanges.

A Mandatory Pre-bid meeting will be held at 10:00 am on July 12, 2024 at the office of the Village of Elk Rapids, 315 Bridge Street, Elk Rapids, Michigan.

Bidding Documents may be obtained from the Issuing Office during the hours indicated above. Bidding Documents are available for download (as portable document format (PDF) files) for a non-refundable charge of \$0.00 zero dollars. Requests for bid documents are to be submitted to Tim Korson by email at [tnkorson@goslingczubak.com](mailto:tnkorson@goslingczubak.com). Alternatively, printed Bidding Documents may be obtained from the Issuing Office either via in-person pick-up or via mail, upon Issuing Office's receipt of payment for the Bidding Documents. The non-refundable cost of printed Bidding Documents is \$250.00 two hundred and fifty dollars per set, payable to "Gosling Czubak", which includes shipping. Upon Issuing Office's receipt of payment, printed Bidding Documents will be sent via the prospective Bidder's delivery method of choice; the shipping charge will depend on the shipping method chosen. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the prospective Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Bid security shall be furnished in accordance with the Instructions to Bidders.

Owner: Village of Elk Rapids

By: John B. Matthews

Title: Village Manager

Date: June 28, 2024

+ + END OF ADVERTISEMENT FOR BIDS + +

# INSTRUCTIONS TO BIDDERS

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## ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

## ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

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

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

## ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within Five days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional 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.

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

4.01 *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.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

- a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
  - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
  - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
  - d. Technical Data contained in such reports and drawings.
2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
  3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
  4. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.

The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.

Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

#### 4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours, and shall 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. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall 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.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

#### 4.04 *Owner's Safety Program*

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

#### 4.05 *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 5 – BIDDER'S REPRESENTATIONS

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

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary

Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

- E. consider 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 Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are ~~encouraged~~ required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

#### ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding 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 certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 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 Documents, 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 Documents 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. Such forfeiture shall 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 91 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 seven 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 substantially completed and ready for final payment are set forth in the Agreement.

## ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 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 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

- 11.01 The Contract for the Work, as 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 proposed substitute and 5 days in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. 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 prospective Bidders. Bidders shall not 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.

- 11.02 All prices that Bidder sets forth in its Bid shall 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.
- 11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

#### ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 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: ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS.

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall 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.

- 12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity 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 7.06 of the General Conditions.
- 12.05 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 12.06 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

#### ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid

price shall 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."
- 13.02 A Bid by a corporation shall 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 shall be shown.
- A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.03 A Bid by a limited liability company shall 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 shall be shown.
- 13.04 A Bid by an individual shall show the Bidder's name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

#### ARTICLE 14 – BASIS OF BID

##### 14.01 *Lump Sum*

- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

##### 14.02 *Unit Price*

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

#### ~~14.03—Allowances~~

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

#### ~~14.04—Price Plus Time Bids~~

- ~~A. The Owner will consider the time of Substantial Completion commitment made by the Bidder in the comparison of Bids.~~
- ~~B. Bidder shall designate the number of days required to achieve Substantial Completion of the Work and enter that number in the Bid Form as the total number of calendar days to substantially complete the Work.~~
- ~~C. The total number of calendar days for Substantial Completion designated by Bidder shall be less than or equal to a maximum of [ ], but not less than the minimum of [ ]. If Bidder purports to designate a time for Substantial Completion that is less than the allowed minimum, or greater than the allowed maximum, Owner will reject the Bid as nonresponsive.~~
- ~~D. The Agreement as executed will contain the Substantial Completion time designated in Successful Bidder's Bid, and the Contractor will be assessed liquidated damages at the rate stated in the Agreement for failure to attain Substantial Completion within that time.~~
- ~~E. [Bidder shall also designate the time in which it will achieve Milestones, and achieve readiness for final payment. Such time commitments shall be consistent with the "Time of Substantial Completion" to which Bidder commits. The Agreement as executed will contain, as binding Contract Times, Successful Bidder's time commitments regarding Milestones, as applicable, and readiness for final payment.]~~

### ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked 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 shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and prior to the time indicated in the Advertisement for Bid. A mailed Bid shall be addressed to Owner at address in Article 1.01 of Bid Form.

- 15.03 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 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A 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.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 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, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### ARTICLE 17 – OPENING OF BIDS

- 17.01 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 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

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

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. 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, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities. ~~not involving price, time, or changes in the Work.~~
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- 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.
  - C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.
    - 1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in calendar days) times the rate for liquidated damages [or other Owner-designated daily rate] (in dollars per day).
    - 2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.
- 19.04 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.
- 19.05 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 20 – BONDS AND INSURANCE

- 20.01 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 and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

#### ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall 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 shall 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 ten days thereafter, Owner shall 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 22 – SALES AND USE TAXES

- ~~22.01 Owner is exempt from [ ] state sales and use taxes on materials and equipment to be incorporated in the Work. (Exemption No. [ ]). Said taxes shall not be included in the Bid. Refer to Paragraph SC 7.09 of the Supplementary Conditions for additional information.~~

ARTICLE 23 – CONTRACTS TO BE ASSIGNED

ARTICLE 24 – WAGE RATE REQUIREMENTS

BID FORM

Village of Elk Rapids  
Mitchell Dr Water and Sewer Improvements  
Project #2021150002

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

*Village of Elk Rapids, 315 Bridge Street, P.O. Box 398, Elk Rapids, MI 49629*

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 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

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

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### ARTICLE 4 – BIDDER'S CERTIFICATION

##### 4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid 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.

#### ARTICLE 5 – BASIS OF BID

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):
  - A. Attached Itemized Bid Schedule
    1. 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 Bid items will be based on actual quantities, determined as provided in the Contract Documents.

#### ARTICLE 6 – TIME OF COMPLETION

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

#### ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 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 license within the time for acceptance of Bids;
  - F. Contractor's License No.: \_\_\_\_\_ or Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
  - G. Required Bidder Qualification Statement with supporting data; and
  - H. Affidavit for Non-Collusion;
  - I. Bid Schedule and Material and Equipment Selection Lists.

#### ARTICLE 8 – DEFINED TERMS

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

ARTICLE 9 – BID SUBMITTAL

BIDDER:

\_\_\_\_\_

By:

\_\_\_\_\_

\_\_\_\_\_

*(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest:

\_\_\_\_\_

\_\_\_\_\_

Title: \_\_\_\_\_

Submittal Date: \_\_\_\_\_

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Name and e-mail address: \_\_\_\_\_

\_\_\_\_\_

Bidder's License No.: \_\_\_\_\_

*(where applicable)*

**BID FORM**

Request Bid Form From Tim Korson at [tnkorson@goslingczubak.com](mailto:tnkorson@goslingczubak.com)

## BID BOND

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

---

BIDDER (*Name and Address*):

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

OWNER (*Name and Address*):

Village of Elk Rapids

BID

Bid Due Date:

Description (*Project Name— Include Location*):

Mitchell Dr Water and Sewer Improvements Project – Village of Elk Rapids

BOND

Bond Number:

Date:

Penal sum \_\_\_\_\_ \$ \_\_\_\_\_

(Words)

(Figures)

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

BIDDER

SURETY

(Seal)

(Seal)

\_\_\_\_\_  
Bidder's Name and Corporate Seal

\_\_\_\_\_  
Surety's Name and Corporate Seal

By:

\_\_\_\_\_  
Signature

By:

\_\_\_\_\_  
Signature (Attach Power of Attorney)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Attest:

\_\_\_\_\_  
Signature

Attest:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

**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 Elk Rapids. Owner's Contract No.:  
Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2021150002  
Project: Mitchell Dr Water and Sewer Contract Name:  
Improvements Project

Bidder:

Bidder's Address:

TO BIDDER:

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:

Village of Elk Rapids Mitchell Dr Water and Sewer Improvements Project.

The Contract Price of the awarded Contract is: \$\_\_

[ 1 ] 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.

a set of the 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 1 counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security and insurance documentation as specified in the Instructions to Bidders and 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 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 ten days after you comply with the above conditions, Owner will return to you one fully executed 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 Elk Rapids

Authorized Signature

By: John B. Matthews

Title: Village Manager

Copy: Engineer

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

THIS AGREEMENT is by and between Village of Elk Rapids (“Owner”) and  
\_\_\_\_\_ (“Contractor”).

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:
- A. Installation of 1,563 LF of 6-inch water main, valves, services, connection to existing main and abandonment of existing water.
  - B. Installation of 231 LF of 1.5-inch and 1,423 LF of 3-inch force main, valves, services, connection to existing main and abandonment of existing services and force main(s).

ARTICLE 2 – THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Village of Elk Rapids Mitchell Dr Water and Sewer Improvements Project.

ARTICLE 3 – ENGINEER

- 3.01 The Project has been designed by Gosling Czubak Engineering Sciences, Inc.
- 3.02 The Owner has retained Gosling Czubak Engineering Sciences, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

- 4.01 *Time of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Contract Times: Dates*
- A. The Work will be substantially completed on or before October 25, 2025, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before November 15, 2025.
- 4.03 *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 times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. 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 \$250 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A 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 Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$250 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.04 *Special Damages*

[Deleted]

ARTICLE 5 – CONTRACT PRICE

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

~~A. For all Work other than Unit Price Work, a lump sum of: \$ \_\_\_\_\_.~~

~~All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.~~

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

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

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

C. ~~Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment)~~  
~~\$ \_\_\_\_\_~~

D. 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 account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 20 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 Work completed (with the balance being retainage); If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

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

### 6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

## ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the maximum legal rate. of        percent ~~per annum.~~

## ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
  - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
  - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
  - E. 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 Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor’s safety precautions and programs.
  - F. 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.
  - G. 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.
  - H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
  - I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
  - J. 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.

## ARTICLE 9 – CONTRACT DOCUMENTS

### 9.01 *Contents*

- A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 7, inclusive).
  2. Performance bond (pages 1 to 3, inclusive).
  3. Payment bond (pages 1 to 3, inclusive).
  4. Other bonds.
    - a. \_\_\_ (pages \_\_\_ to \_\_\_, inclusive).
  5. General Conditions (pages 1 to 65, inclusive).
  6. Supplementary Conditions (pages 1 to 9, inclusive).
  7. Specifications as listed in the table of contents of the Project Manual.
  8. Drawings (not attached but incorporated by reference) consisting of 10 sheets with each sheet bearing the following general title: Village of Elk Rapids – Mitchell Drive Water and Sewer Improvements Project \_\_\_.
  9. Addenda (numbers \_\_\_ to \_\_\_, inclusive).
  10. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages \_\_\_ to \_\_\_, inclusive).
  11. 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 documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

## ARTICLE 10 – MISCELLANEOUS

### 10.01 *Terms*

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

### 10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, 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 Documents.

### 10.03 *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.

### 10.04 *Severability*

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

### 10.05 *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 10.05:
  1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process 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.

### 10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, 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 Date (which is the Effective Date of the Contract).

OWNER: Village of Elk Rapids

CONTRACTOR:

By: John B. Matthews

By: \_\_\_\_\_

Title: Village Manager

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

315 Bridge Street

P.O. Box 315

Elk Rapids, Michigan, 49630

License No.: \_\_\_\_\_

*(where applicable)*

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



## PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

Village of Elk Rapids

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount: \$00

Description *(name and location):* Village of Elk Rapids - Mitchell Dr Water and Sewer Improvements Project

**BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount: \$00

Modifications to this Bond Form:  None  See Paragraph 16

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

**CONTRACTOR AS PRINCIPAL**

**SURETY**

\_\_\_\_\_  
 Contractor's Name and Corporate Seal *(seal)*

\_\_\_\_\_  
 Surety's Name and Corporate Seal *(seal)*

By: \_\_\_\_\_  
 Signature

By: \_\_\_\_\_  
 Signature *(attach power of attorney)*

\_\_\_\_\_  
 Print Name

\_\_\_\_\_  
 Print Name

\_\_\_\_\_  
 Title

\_\_\_\_\_  
 Title

Attest: \_\_\_\_\_  
 Signature

Attest: \_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Title

\_\_\_\_\_  
 Title

*Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.*

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall 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 shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than 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 may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after 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 shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

## PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

Village of Elk Rapids

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount: \$00

Description *(name and location)*: Village of Elk Rapids Mitchell Dr Water and Sewer Improvements Project

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount: \$00

Modifications to this Bond Form:  None  See Paragraph 18

---

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

### CONTRACTOR AS PRINCIPAL

### SURETY

\_\_\_\_\_ *(seal)*

Contractor's Name and Corporate Seal

\_\_\_\_\_ *(seal)*

Surety's Name and Corporate Seal

By: \_\_\_\_\_

Signature

By: \_\_\_\_\_

Signature *(attach power of attorney)*

\_\_\_\_\_

Print Name

\_\_\_\_\_

Print Name

\_\_\_\_\_

Title

\_\_\_\_\_

Title

Attest: \_\_\_\_\_

Signature

Attest: \_\_\_\_\_

Signature

\_\_\_\_\_

Title

\_\_\_\_\_

Title

*Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.*

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 satisfy 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 shall 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 shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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:
    1. The name of the Claimant;
    2. The name of the person for whom the labor was done, or materials or equipment furnished;
    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;
    4. A brief description of the labor, materials, or equipment furnished;
    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;
    6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
    7. The total amount of previous payments received by the Claimant; and
  - 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 shall be 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:
  8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.





Date of Issuance: \_\_\_\_\_ Effective Date: \_\_\_\_\_  
 Owner: Village of Elk Rapids Owner's Contract No.: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
 Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2021150002  
 Project: Mitchell Dr Water and Sewer Improvements Project Contract Name: \_\_\_\_\_

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

Description: \_\_\_\_\_

Attachments: \_\_\_\_\_

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Work Change Directive No.

Date of Issuance: \_\_\_\_\_ Effective Date: \_\_\_\_\_  
 Owner: Village of Elk Rapids Owner's Contract No.: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
 Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2021150002  
 Project: Mitchell Dr Water and Sewer Contract Name: \_\_\_\_\_  
 Improvements Project

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

Description:

Attachments:

**Purpose for Work Change Directive:**

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

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

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

Contract Price \$ \_\_\_\_\_ [increase] [decrease].  
 Contract Time \_\_\_\_\_ days [increase] [decrease].

Basis of estimated change in Contract Price:

- Lump Sum  Unit Price
- Cost of the Work  Other

RECOMMENDED:

AUTHORIZED BY:

RECEIVED:

By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_



**Contractor's Application for Payment No.**

	Application Period:	Application Date:
To (Owner): Village of Elk Rapids	From (Contractor):	Via (Engineer): Gosling Czubak Engineering Sciences, Inc.
Project: Mitchell Dr Water and Sewer Improvements Project	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.: 2021150002.00

**Application For Payment  
Change Order Summary**

Approved Change Orders			
Number	Additions	Deductions	
			<b>1. ORIGINAL CONTRACT PRICE</b> ..... \$ _____
			<b>2. Net change by Change Orders</b> ..... \$ _____
			<b>3. Current Contract Price (Line 1 ± 2)</b> ..... \$ _____
			<b>4. TOTAL COMPLETED AND STORED TO DATE</b> (Column F total on Progress Estimates)..... \$ _____
			<b>5. RETAINAGE:</b>
			a. 10% X _____ Work Completed..... \$ _____
			b. 10% X _____ Stored Material..... \$ _____
			c. Total Retainage (Line 5.a + Line 5.b)..... \$ _____
			<b>6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c)</b> ..... \$ _____
			<b>7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)</b> ..... \$ _____
			<b>8. AMOUNT DUE THIS APPLICATION</b> ..... \$ _____
			<b>9. BALANCE TO FINISH, PLUS RETAINAGE</b> (Column G total on Progress Estimates + Line 5.c above)..... \$ _____
TOTALS			
NET CHANGE BY CHANGE ORDERS			

**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**

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

Payment of: \$ \_\_\_\_\_  
(Line 8 or other - attach explanation of the other amount)

is recommended by: \_\_\_\_\_ (Date) \_\_\_\_\_ (Engineer) \_\_\_\_\_ (Date)

Payment of: \$ \_\_\_\_\_  
(Line 8 or other - attach explanation of the other amount)

is approved by: \_\_\_\_\_ (Date) \_\_\_\_\_ (Owner) \_\_\_\_\_ (Date)

Approved by: \_\_\_\_\_ (Date) \_\_\_\_\_ (Funding or Financing Entity (if applicable)) \_\_\_\_\_ (Date)







**CERTIFICATE OF SUBSTANTIAL COMPLETION**

Owner:	Village of Elk Rapids	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Gosling Czubak Engineering Sciences, Inc.	Engineer's Project No.:	2021150002
Project:	Mitchell Dr Water and Sewer Improvements Project	Contract Name:	

This [preliminary] [final] Certificate of Substantial Completion applies to:

All Work  The following specified portions of the Work:

**Date**

\_\_\_\_\_  
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the 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.

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 shall be as provided in the Contract, except as amended as follows: *[Note: 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.]*

Amendments to Owner's responsibilities:  None  
 As follows

Amendments to Contractor's responsibilities:  None  
 As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

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

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by





# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to 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, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to 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. 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), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the 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. *Engineer*—The individual or entity named as such in the Agreement.
21. *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.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *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.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *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.
28. *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.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *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.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *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.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *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.
36. *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.



37. *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 furnished by Owner which are designated for the use of Contractor.
38. *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.
39. *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.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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.

48. *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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 – PRELIMINARY MATTERS

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

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### 2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. 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 specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
  1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
  2. a preliminary Schedule of Submittals; and

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

#### 2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by 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 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

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

#### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

#### 3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
  - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
  - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

#### 3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
  - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to 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 shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on 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 give written notice to Owner and Contractor 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 editions, 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 shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

## ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

### 4.01 *Commencement of Contract Times; Notice to Proceed*

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

### 4.02 *Starting the Work*

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

### 4.03 *Reference Points*

- A. 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 shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall 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 the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  2. abnormal weather conditions;
  3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.



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

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

### 5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, 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; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless 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 shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by 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 known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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 upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  - 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.

#### 5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
  2. is of such a nature as to require a change in the Drawings or Specifications; or
  3. differs materially from that shown or indicated in the Contract Documents; or
  4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify 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 the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to 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. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
    - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
  - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
  - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
  1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise 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. *Possible Price and Times Adjustments:*
  - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
    - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
    - d. Contractor gave the notice required in Paragraph 5.05.B.
  - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
  - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

## 5.06 Hazardous Environmental Conditions at Site

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  2. 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate 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 shall obligate 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 all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

### 6.02 *Insurance—General Provisions*

- A. 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. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is



maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. 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, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

### 6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  2. claims for damages insured by reasonably available personal injury liability coverage.
  3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish 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, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
  8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
  2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
  3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
  4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
  5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

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

#### 6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
  - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
  - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by 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 notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

## 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. 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 or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. 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:
  - 1. loss 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 perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against 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 any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

## 6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

## ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

### 7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### 7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

### 7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of 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 shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
      - 3) it has a proven record of performance and availability of responsive service; and
      - 4) it is not objectionable to Owner.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it 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 shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

#### 7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
  - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
  - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
  - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
    - a. shall certify that the proposed substitute item will:
      - 1) perform adequately the functions and achieve the results called for by the general design,
      - 2) be similar in substance to that specified, and
      - 3) be suited to the same use as that specified.
    - 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 that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from 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 shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

#### 7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to 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 five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

- O. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
  2. shall create 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.

#### 7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of 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 shall be disclosed by Owner 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.

#### 7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. 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

#### 7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

#### 7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

#### 7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
  - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
  - D. 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.
  - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, 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).
  - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
  - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

#### 7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

#### 7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

##### A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
    - a. Contractor shall submit the number of Samples required in the Specifications.
    - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
  3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
  2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
  3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
  4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
  5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
  6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
  7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.



8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.
- E. *Resubmittal Procedures:*
1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
  2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
  3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

#### 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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  1. observations by Engineer;
  2. recommendation by Engineer or payment by 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. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.

- D. 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 shall 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 and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or 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 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
  - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

## ARTICLE 8 – OTHER WORK AT THE SITE

### 8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the 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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

## 8.02 *Coordination*

- A. If 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 at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to 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 is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to 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.
- C. 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 to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, 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 shall 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 Documents (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 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

#### 10.03 *Project Representative*

- A. If 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 Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

#### 10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

#### 10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

#### 10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

#### 10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to 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.

#### 10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

#### 10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

### ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

#### 11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an



adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
  1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
  2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
    - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to 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.
  3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
  2. changes in Contract Price resulting from 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 11.02, (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 in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

### ARTICLE 12 – CLAIMS

#### 12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted 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; and
  - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
  - 2. If 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 shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. 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 shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either 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 shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

### 13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
  2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
  1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall 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, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
  - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to 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 on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of 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 on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

### 13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
  - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
  - 2. there is no corresponding adjustment with respect to any other item of Work; and
  - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.



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

### 14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

### 14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. 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 shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
  - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to 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 shall 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 shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which 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 shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then 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 special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
  - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the 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, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *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 shall 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 rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, 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 on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to 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, or
    - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
    - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
    - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
    - e. to determine that title to any of the Work, materials, or equipment has passed to 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 on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
  - 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - l. there are other items entitling 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 shall 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 shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

#### 15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by 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 shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to 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 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 6.05 regarding builder's risk or other property insurance.

#### 15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with 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 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - 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 disputes that Contractor believes are unsettled; 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 Application and Acceptance:***

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall 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. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

**C. *Completion of Work:*** The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

**D. *Payment Becomes Due:*** Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

#### 15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of 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 claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

### 16.01 *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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

### 16.02 *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) ten 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) 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 seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate For Convenience*

- A. Upon seven 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 on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

#### 16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by 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 seven 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, seven 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; and
  2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
  2. agree with the other party to submit the dispute to another dispute resolution process; or
  3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## ARTICLE 18 – MISCELLANEOUS

### 18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### 18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### 18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be 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 shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

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

# Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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 thereto.

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC 1.01.A.8 Add to the following language at the end of last sentence of paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC C-941.

SC 1.01.A.48 Add the following language at the end of the last sentence of Paragraph 1.01.A.48:

A Work Change Directive cannot change Contract Price or Contract Times without subsequent Change Order.

SC 1.01.A.49 Add the following new Paragraph after Paragraph 1.01.A.48:

Abnormal Weather Conditions – Conditions of extreme or unusual weather for that given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal Weather Conditions.

## ARTICLE 2 – PRELIMINARY MATTERS

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

Owner shall furnish to Contractor five copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

SC 2.06.B Delete Paragraph 2.06.B and replace it with the term [Deleted].

## ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC 4.01.A Amend the last sentence of Paragraph 4.01A by striking out the following words:

In no event will the Contract Times commence to run later than the ninetieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

SC4.03.A Add the following after the first sentence of 4.03.A

Owner shall be responsible for staking the centerline of roads within the construction area. Any additional staking will be at the Contractor's expense.

SC 4.05.C.2 Amend Paragraph 4.05.C.2 by striking out the following text: "abnormal weather conditions;" and inserting the following text:

Abnormal Weather Conditions;

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

SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:

A. Soil Boring Logs can be found in Appendix B.

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.



B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

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

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

State: Statutory

Federal, if applicable (e.g., Longshoreman's): Statutory

Jones Act coverage, if applicable:

Bodily injury by accident, each accident \$ \_\_\_\_\_

Bodily injury by disease, aggregate \$ \_\_\_\_\_

Employer's Liability:

Bodily injury, each accident \$ 500,000

Bodily injury by disease, each employee \$ \_\_\_\_\_

Bodily injury/disease aggregate \$ \_\_\_\_\_

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of: \$ \_\_\_\_\_

Foreign voluntary worker compensation Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate \$ 2,000,000

Products - Completed Operations Aggregate \$ 2,000,000

Personal and Advertising Injury \$ 1,000,000

Each Occurrence (Bodily Injury and Property Damage) \$ 1,000,000

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person	\$ <u>1,000,000</u>
Each accident	\$ <u>1,000,000</u>

Property Damage:

Each accident	\$ <u>1,000,000</u>
<i>[or]</i>	
Combined Single Limit of	\$ <u>2,000,000</u>

4. Excess or Umbrella Liability:

Per Occurrence	\$ <u>5,000,000</u>
General Aggregate	\$ <u>5,000,000</u>

5. Contractor's Pollution Liability:

Each Occurrence	\$ _____
General Aggregate	\$ _____

If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following:

- (a) The Owner (The Village of Elk Rapids)
- (b) Gosling Czubak Engineering Sciences, Inc.

7. Contractor's Professional Liability:

Each Claim	\$ <u>2,000,000</u>
Annual Aggregate	\$ <u>2,000,000</u>

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC 7.02.B Add the following sentence behind the second sentence and delete the final sentence in this paragraph.

Regular working hours will be defined as 7 a.m. to 6 p.m. Monday through Friday and Contractor will not permit the performance of Work on Saturday or Sunday unless an emergency situation arises and at the discretion of the Engineer or Owner the Work must be completed to mitigate the emergency situation. No additional work will be allowed on Saturday or Sunday once the

emergency situation has been mitigated. Testing, as defined in Section 1410, will be completed during regular working hours, any testing done beyond regular working hours or requested to be done outside of regular working hours will be completed at Contractor's expense once a services agreement has been executed.

- SC 7.04.A Amend the third sentence of Paragraph 7.04.A by striking out the following words:  
Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item is permitted.
- SC 7.04.A.1 Amend the last sentence of Paragraph a.3 by striking out "and;" and adding a period at the end of Paragraph a.3.
- SC 7.04.1 Delete paragraph 7.04.A.1.a.4 in its entirety and insert the following in its place:  
[Deleted]
- SC 7.06.A Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:  
The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of Owner.
- SC 7.06.B Delete paragraph 7.06.B. in its entirety and insert the following in its place:  
[Deleted]
- SC 7.06.E Amend the second sentence of Paragraph 7.06.E by striking out "Owner may also require Contractor to retain replacements; provided, however, that".

#### ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

- SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:
- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
  2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
  3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
  4. 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 proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
- a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
  - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
  - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
- a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
  - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
- a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
  - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. Records:
  - a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
  - b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
  - c. Maintain records for use in preparing Project documentation.
11. Reports:
  - a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
  - b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
  - c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.
14. Completion:
  - a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
  - b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a

final punch list of items to be completed and deficiencies to be remedied.

- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall 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 Contractor's work.
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. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

#### ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC 13.02.C Delete Paragraph 13.02.C in its entirety and insert the following in its place:

[Deleted]

#### ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC 15.01.B Amend the second sentence of Paragraph 15.01.B.1 by striking out the following text:  
"a bill of sale, invoice, or other."

SC 15.01.B.3 Add the following language at the end of paragraph 15.01.B.3:

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

SC 15.01.B.4 Add the following new Paragraph after Paragraph 15.01.B.3:

The Application for Payment form to be used on this Project is EJCDC C-620.

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

The Application for Payment with the Engineer's recommendations will be presented to the Owner for consideration. If the Owner finds the Application

for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC 15.02.A Amend Paragraph 15.02.A by striking out the following text: “no later than seven days after the time of payment by Owner” and insert “no later than the time of payment by Owner.”

---

Date of Issuance: \_\_\_\_\_ Effective Date: \_\_\_\_\_  
Owner: Village of Elk Rapids Owner's Contract No.: \_\_\_\_\_  
Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
Engineer: Gosling Czubak Engineering Sciences, Inc. Engineer's Project No.: 2021150002  
Project: Mitchell Dr Water and Sewer Contract Name: \_\_\_\_\_  
Improvements Project

---

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference: \_\_\_\_\_  
Specification(s) Drawing(s) / Detail(s)

---

Description:

Attachments:

---

ISSUED:	RECEIVED:
By: _____ Engineer (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____
Date: _____	Date: _____

Copy to: Owner



SECTION 01 00 10  
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

Work will include:

Installation of 1,563 LF of 6-inch water main, valves, services, connection to existing main and abandonment of existing water.

Installation of 231 LF of 1.5-inch and 1,423 LF of 3-inch force main, valves, services, connection to existing main and abandonment of existing services.

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 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURE

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 Lump Sum Bids 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 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 tape.
  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 31 25 00 or as directed by the engineer.
  2. Unit of Measure: Lump Sum.
- E. Item No. 5 Transplant Decorative Tree
1. Payment includes removing, storing, and replanting decorative tree in existing cul-de-sac island.
  2. Unit of Measure: Lump Sum.
- F. Item No. 6 Asphalt Removal
1. Payment includes crushing and salvaging pavement and stockpiling as necessary to perform underground work.
  2. Unit of measure: Square yard of pavement crushed, based on existing pavement width shown on plans.
- G. Item No. 7 Curb and Gutter Removal
1. Payment includes removing and disposing of concrete curb and gutter.
  2. Unit of measure: LF based on plans.
- H. Item No. 8 Dewatering
1. Payment includes all material and labor necessary for proper dewatering of areas under construction for the installation of underground utilities according to Section 31 23 19.
  2. Unit of measure: Lump Sum.
- I. Item No. 9 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. 10 Gate Valve & Box
1. Payment includes furnishing and installation of valve, valve box with lid, restraints, and testing.
  2. Unit of measure: Each valve installed for each size listed in the Bid Schedule.
- K. Item Nos. 11 & 12 New Water Services and Replacement of Existing Water Services
1. Payment includes installation (either open cut or directional bore) 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. For the majority of the services, the curb stop and box shall be installed one- (1) foot off the property line.

2. Unit of measure: Each water service installed or replaced for each size and length 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 Connect and Abandon Existing Water Main
1. Payment includes making connection, plugging 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: Lump Sum.
- O. Item No. 16 Temporary Sanitary Service
1. Payment includes installation of temporary sanitary sewer force main, services, operation and maintenance, and abandonment.
  2. Unit of measure: Lump Sum.
- P. Item Nos. 17 & 19 Sanitary Sewer Force Main
1. Payment includes installation of sanitary sewer force main as shown on the plans.
  2. Unit of measure: Linear feet of sanitary sewer force main for each size listed in the Bid Schedule.
- Q. Item No. 20 Force Main Cleanout
1. Payment includes material and labor necessary for proper installation of the cleanout including but not limited to piping, fittings, joint restraints, bedding, backfill, fill materials, thrust blocks, locators, covers, flushing and testing.
  2. Unit of measure: Each structure listed in the Bid Schedule.
- R. Item No. 21 Connect to Existing Sewer
1. Payment includes making connection to existing sanitary manhole, piping, fittings, joint restraints, bedding, backfill, fill materials, thrust blocks, locators, flushing, testing and material removal.
  2. Unit of measure: Lump Sum.
- S. Item Nos. 22 & 23 New Sanitary Sewer Services
1. Payment includes installation of 1.5-inch sanitary sewer piping from new sewer connection to the ROW, sewer tap, curb stop and valve, fittings, and connection to existing customer piping.
  2. Unit of measure: Each sanitary service installed or for each size listed in the Bid Schedule.

- T. Items No. 24 Aggregate Base Course
  - 1. Payment includes preparation of subbase, placement of salvaged crushed material, furnishing and placement of 22A aggregate to achieve 6-inch base, compaction, traffic control and testing.
  - 2. Unit of measure: Square yard measured in place.
  
- U. Item No. 25 Curb and Gutter
  - 1. Payment includes placement of curb and gutter as required or as shown on plans, preparation of base, base material, placement of concrete curb and gutter of the type shown on the plans, traffic control and testing.
  - 2. Unit of measure: Lineal foot installed.
  
- V. Item No. 26 HMA Restoration
  - 1. Payment includes bituminous 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 bituminous restoration listed in the Bid Schedule as defined within the Specifications.
  
- W. Item No. 27 2-foot Aggregate Shoulder
  - 1. Payment includes aggregate material, placement, and testing.
  - 2. Unit of measure Square Yard listed in the Bid Schedule.
  
- X. Item No. 28 Pavement Marking
  - 1. Payment includes pavement markings for the crossing of Mitchell at the intersection of Ames and Mitchell.
  - 2. Unit of measure: Lump Sum.
  
- Y. 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.
  
- Z. Item No. 30 Temporary Gravel Drive
  - 1. Payment includes clearing, installing temporary gravel drive, removing, and restoration of disturbed area.
  - 2. Unit of measure: Lump Sum.

END OF SECTION

SECTION 01 25 13

PRODUCT SUBSTITUTION PROCEDURES

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 an electronic copy or five hard 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 01 29 76  
PROGRESS PAYMENT PROCEDURES

PART 1 GENERAL

1.01 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 an electronic copy or three signed hard copies to the Engineer for review.
  - 2. Application for payment shall be submitted to the Engineer as agreed to at the preconstruction meeting.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION



SECTION 01 31 19  
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 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

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

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 31 32 36

VIDEO MONITORING AND DOCUMENTATION

PART 1 GENERAL

1.01 AUDIO-VIDEO ROUTE SURVEY

A. General:

1. When required in Section 01 00 01 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 to a USB portable drive.
  - b. By electronic means, display continuously the date (month, day and year) and time (hours, minutes and seconds).
  - c. Be made on continuously running USB portable drives.
  - 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 video shall be submitted to Engineer for review before the preconstruction meeting.
- b. The Engineer shall review the video within five full working days of receipt.
- c. Any recorded 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 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 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.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 41 00

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 01 41 00 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 01 42 13 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 01 42 29  
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.
  - 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 01 56 00

TEMPORARY BARRIERS AND ENCLOSURES

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 01 56 26  
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 01 20 00 - PRICE AND PAYMENT PROCEDURE
  - Section 01 29 76 - PROGRESS PAYMENT PROCEDURES

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 01 20 00 - PRICE AND PAYMENT PROCEDURE

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.
- D. Vehicular and pedestrian access to local streets, occupied homes, business, etc. shall be restored by the end of each working day.

END OF SECTION

SECTION 01 66 00

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 01 71 23  
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 conducted at the site. Boring logs are shown on the plans and included in the Appendix.

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 01 78 00  
CONTRACT CLOSEOUT SUBMITTAL

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 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 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.

PART 2 PRODUCT - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 31 00 00

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 31 40 00, 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 sheepsfoot 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 31 23 19

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 01 20 00 PRICE AND PAYMENT PROCEDURE.

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.
- B. Dewatering system shall be filtered and discharged to the sanitary sewer system for treatment at the Owner's Wastewater Treatment Plant (WWTP).
- C. Coordinate connection to sanitary sewer location with Owner.
- D. Dewatering water shall not be discharged to grade or body of water.
- E. Coordinate dewatering flow rate with Owner to prevent sewer backups or exceedance of pump station capacity and WWTP loading.

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 31 25 00  
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 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK
  - 3. Section 32 90 00 PLANTINGS

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 01 20 00 PRICE AND PAYMENT PROCEDURE.

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.

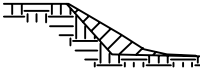

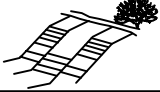
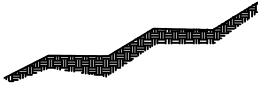
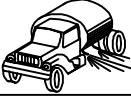
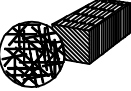



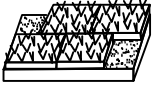






- B. Prepare soil prior to placing mulch blanket with topsoil, seed and fertilizer.
- C. Place mulch blanket from top of slope down so overlap seams run parallel to slope.
- D. Overlap seams a minimum of 2" on parallel seams, and six inches, shingle style, on perpendicular splices.

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.
<b>EROSION / SEDIMENT CONTROLS</b>			
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 PILINGS		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 31 40 00  
SHORING AND BRACING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes, all materials and labor to 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.
- C. Related Sections:
  - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE

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 01 20 00 PRICE AND PAYMENT PROCEDURE.

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 32 12 16

ASPHALT 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:
  - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK

1.02 UNIT PRICES

Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURE 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 LVSP
- C. Wearing course: MDOT LVSP
- D. Bond Coat: MDOT SS-1h.
- E. Target Air Voids – 3%
- F. Maximum 17% RAP Allowed.



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 a minimum of 92% theoretical 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 31 00 00 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

<u>Subgrade:</u>	One Density Test every 500 feet, per lane (95% max. modified proctor)
<u>Subbase:</u>	One Gradation Test every 10,000 cubic yards – Class II material One Density Test every 500 feet, per lane (95% max. modified proctor)
<u>Base:</u>	One Gradation Test every 3,000 cubic yards – Class II material One Density Test every 500 feet, per lane (95% max. modified proctor)
<u>Asphalt:</u>	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 32 13 13  
CONCRETE PAVING

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 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK

1.02 UNIT PRICES

Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURE.

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 31 00 00, 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 31 00 00, 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.

CONCRETE PAVING

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.

END OF SECTION

SECTION 32 15 00  
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 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 01 45 29 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 1 20 00 PRICE AND PAYMENT PROCEDURE.

1.03 QUALITY ASSURANCES

- A. Testing:
  - 1. Test in accordance with Section 01 45 29, 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 32 16 13  
CURBS AND GUTTERS

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 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK

1.02 UNIT PRICES

Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURE

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 31 00 00, 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 31 00 00, EARTHWORK 02200.
- C. Backfill and compact all voids remaining after forms are removed.

3.02 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.

## CURBS AND GUTTERS

- 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.

END OF SECTION

SECTION 32 16 23  
SIDEWALKS

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 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK
  - 3. Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1.02 UNIT PRICES

Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURE

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 31 00 00, 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 31 00 00, EARTHWORK.
- C. Backfill and compact all voids remaining after forms are removed.

3.02 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: 1/4" per foot toward curb.
- C. Joints:
1. Expansion joints:
    - a. Provide 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.

### 3.03 SIDEWALK RAMPS

- A. Construct MDOT ADA sidewalk ramps with detectable warning strips (tactile strips) at all locations where new sidewalks meet curbs. Submit detectable warning strip and other sidewalk appurtenance materials in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- 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 32 17 23  
PAVEMENT MARKING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
  - 1. Removal of existing pavement markings.
  - 2. Application of new pavement markings.
- B. Related Sections:
  - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 01 56 00 TEMPORARY BARRIERS AND ENCLOSURES
  - 3. Section 01 56 23 TRAFFIC REGULATION

1.02 UNIT PRICES

Refer to Section 01 20 00, PRICE AND PAYMENT PROCEDURE

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. 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 (if included) to protect the wet paint.
- C. Markings obliterated by traffic shall be retraced at the contractor's expense.

END OF SECTION

SECTION 32 90 00  
PLANTING

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
  - 1. Section 01 20 00 PRICE AND PAYMENT PROCEDURE
  - 2. Section 31 00 00 EARTHWORK
  - 3. Section 31 25 00 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 01 20 00, PRICE AND PAYMENT PROCEDURE.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Provide topsoil as specified in Section 31 00 00, 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 ( $P_2O_5$ ), and Potash ( $K_2O$ ).
  - 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.
- G. Maintenance:
  - 1. Mow areas in the ROW to facilitate growth as directed by the engineer until substantial completion is achieved.

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

SECTION 33 05 17.13  
UTILITY DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: all labor, materials, 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

- 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- 31 23 19 DEWATERING
- 33 14 13 PUBLIC WATER UTILITY DISTRIBUTION PIPING
- 33 31 26 SANITARY PRESSURE SEWER PIPING

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.

## 2.03 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 SnakePit Two-terminal Switchable CD14\*2T-SW, SnakePit Single-terminal CD14\*TP, VALCO Inc Mini test station, or equal. Lid shall be blue for water and green for sewer.

## 2.04 WATER SERVICES

- A. Water services shall be the same material specified in Section 33 14 13 – PUBLIC WATER UTILITY DISTRIBUTION PIPING.
- 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.

## 2.05 SANITARY PRESSURE SERVICES

- C. Sanitary pressure services shall be the same material specified in Section 33 31 26 - SANITARY PRESSURE SEWER PIPING.
- D. Services connected to HDPE mains:
  - 3. Use fusion connector approved to be used with HDPE Philmac connection or equal, capable of being joined with K-copper pipe.
  - 4. Provide flexible connector from HDPE main to copper service pipe.

## 2.06 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 pulls 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 33 14 13  
PUBLIC WATER UTILITY DISTRIBUTION PIPING WATER DISTRIBUTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: all labor, tools, equipment, and testing necessary for the installation of all water main and appurtenances and related sections.
- B. 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

1.02 UNIT PRICES

Refer to Section 01 20 00, PRICE AND PAYMENT PROCEDURE

1.03 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

1.04 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. 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:  $\geq 3$ " 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, HDPE or PVC

#### 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 SnakePit Two-terminal Switchable CD14\*2T-SW, SnakePit Single-terminal CD14\*TP , VALCO Inc Mini test station, or equal. Lid shall be blue.

### 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 and intersection of two or more pipes 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 31 00 00, EARTHWORK 01300.
- 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  $\pm 5$  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  $\pm 2$  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



## PUBLIC SANITARY SEWERAGE GRAVITY PIPING SANITARY SEWERS

## SECTION 33 31 11

## PUBLIC SANITARY SEWERAGE GRAVITY PIPING 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 01 20 00 | PRICE AND PAYMENT PROCEDURE              |
| 2. Section 01 33 23 | SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES |
| 3. Section 31 00 00 | EARTHWORK                                |

## 1.02 UNIT PRICES

Refer to Section 01 20 00, PRICE AND PAYMENT PROCEDURE

## 1.03 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

## 1.04 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.

## 1.05 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.

## 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:

## PUBLIC SANITARY SEWERAGE GRAVITY PIPING SANITARY SEWERS

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 31 00 00, EARTHWORK 01300.
- 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.

## PUBLIC SANITARY SEWERAGE GRAVITY PIPING SANITARY SEWERS

- 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.

## PUBLIC SANITARY SEWERAGE GRAVITY PIPING SANITARY SEWERS

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

## SANITARY PRESSURE SEWER PIPING

## SECTION 33 31 26

## SANITARY PRESSURE SEWER PIPING

## PART 1 GENERAL

## 1.01 SUMMARY

- A. Section includes: all labor, materials, tools, equipment, and testing necessary for the installation of all force main and appurtenances and related sections.
- B. 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
  4. Section 33 05 17.13 UTILITY DIRECTIONAL DRILLING

## 1.02 UNIT PRICES

Refer to Section 01 20 00, PRICE AND PAYMENT PROCEDURE

## 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 FORCE MAIN

- A. Ductile Iron
1. Design standard: AWWA C151
  2. Thickness: AWWA C150, Class 52

## SANITARY PRESSURE SEWER PIPING

3. Exterior coating: Bituminous, AWWA C151, 51-8.1
4. Interior coating: AWWA C104
5. Joints: AWWA C111
6. Pipe marking:
  - a. All pipe shall be marked as required by AWWA C151.

## B. PVC

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

## C. HDPE

1. See Section 33 05 17.13, UTILITY DIRECTIONAL DRILLING

## 2.02 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

## C. HDPE 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.

## 2.03 RESTRAINED JOINTS

## A. Ductile iron pipe:

1. Push-on joint:
  - a. Design standard: AWWA C111
  - b. Thickness: AWWA C151, Class 52

## SANITARY PRESSURE SEWER PIPING

- 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
- 2.04 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
- 2.05 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
- 2.06 SERVICES

## SANITARY PRESSURE SEWER PIPING

- A. Low pressure service lines:
  - 1. Size: 1/2" – 2.5"
  - 2. Design Standard: ASTM 3035
  - 3. Material: HDPE SDR 9
  
- B. Saddles:
  - 1. Standard: ASTM D3350
  - 2. Type: Electrofusion Branch Saddle
  - 3. Manufactured and tested: ASTM F-1055
  - 4. Inline tees: >/= 3" services
  
- D. Curb stops:
  - 1. Design standard: ASTM CF8M 316 SS
  - 2. Material: 316 Stainless Steel
  - 3. Pressure Rating: 200 psi working pressure
  - 4. Manufacturer: Liberty CSV or Engineer approved equal
  - 5. Joints: Female NPT threaded
  
- E. Curb box:
  - 1. 1" to 2 Services
    - a. Cast iron
    - b. Tyler series 6500
    - c. Screw type, 2 1/4" ID
    - d. Use enlarged base w/ 2" curb stop
    - e. Use with or without stationary rod
    - f. Cover marked "Sewer"

## 2.07 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".

## 2.08 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.

## 2.09 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 SnakePit Two-terminal Switchable CD14\*2T-SW, SnakePit Single-terminal CD14\*TP , VALCO Inc Mini test station, or equal with lid shall be green.

## PART 3 EXECUTION



## SANITARY PRESSURE SEWER PIPING

## 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."
  6. For pipe installed by horizontally directional drilling, refer to Section 33 05 17.13, UTILITY DIRECTIONAL DRILLING
- 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 31 00 00, 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:

## SANITARY PRESSURE SEWER PIPING

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.
- G. 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.
- H. Tracer Wire and Tracer Box
1. All force main 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 where noted on plans.

## 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 SERVICE CONNECTIONS

- A. Saddles:
  1. HDPE main: use on all service connections
- B. Service line: Services 1 inch to 2 inch: Install type HDPE or PVC tubing from saddle to curb stop.
- C. Curb stops:
  1. Services  $\frac{3}{4}$  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.

## SANITARY PRESSURE SEWER PIPING

2. Services 3 inch and Larger: Install standard gate valve with box.
  3. Threaded or fusible joints
- D. Earthwork:  
Perform all trench excavation, pipe bedding, and backfilling in accordance with Section 31 00 00, EARTHWORK.
- E. Cleaning:  
Flush all service connections until clean.

## 3.04 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.

## 3.05 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.

## SANITARY PRESSURE SEWER PIPING

- 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  $\pm 5$  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.
  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  $\pm 2$  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 33 40 00  
STORMWATER UTILITIES

PART 1 GENERAL

1.01 SUMMARY

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

B. 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                                |
| 4. Section 31 25 00 | EROSION CONTROL                          |

1.02 UNIT PRICES

Refer to Section 01 20 00, PRICE AND PAYMENT PROCEDURE

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 31 25 00, 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

#### 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 31 00 00, 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 31 00 00, 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

APPENDIX A  
WATER AND SEWER SERVICE SCHEDULE

Item No.	ACCOUNT NO.	ADDRESS	WATER SERVICE SIZE	SEWER SERVICE SIZE
1	65045100	110 MITCHELL	1-INCH	- None -
2	65050100	111 MITCHELL	1-INCH	1.25-INCH
3	65055200	112 MITCHELL	1-INCH	1.25-INCH
4	65065000	114 MITCHELL	1-INCH	1.25-INCH
5	65060100	115 MITCHELL	1-INCH	1.25-INCH
6	65070200	116 MITCHELL	1-INCH	1.25-INCH
7	65063200	117 MITCHELL	1-INCH	1.25-INCH
8	65075300	118 MITCHELL	1-INCH	1.25-INCH
9	65079000	119 MITCHELL	1-INCH	1.25-INCH
10	65077000	120 MITCHELL	1-INCH	1.25-INCH
11	65080200	121 MITCHELL	1-INCH	1.25-INCH
12	65085200	122 MITCHELL	1-INCH	1.25-INCH
13	65090300	124 MITCHELL	1-INCH	1.25-INCH
14	65095200	125 MITCHELL	1-INCH	1.25-INCH
15	65096100	126 MITCHELL	1-INCH	1.25-INCH
16	65100100	128 MITCHELL	1-INCH	1.25-INCH
17	65095700	129 MITCHELL	1-INCH	1.25-INCH
18	65102200	130 MITCHELL	1-INCH	1.25-INCH
19	65103100	131 MITCHELL	1-INCH	1.25-INCH
20	65105000	132 MITCHELL	1-INCH	1.25-INCH
21	65110100	134 MITCHELL	1-INCH	1.25-INCH
22	65115200	136 MITCHELL	1-INCH	1.25-INCH
23	65121100	138 MITCHELL	1-INCH	1.25-INCH
24	65122300	150 MITCHELL	1-INCH	1.25-INCH
25	65122600	152 MITCHELL	1-INCH	1.25-INCH
26	65123000	153 MITCHELL	1-INCH	1.25-INCH

END OF SECTION



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	SPT N-Value	Consistency	SPT N-Value	Ppen, tsf
Boulders - > 12-in					
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

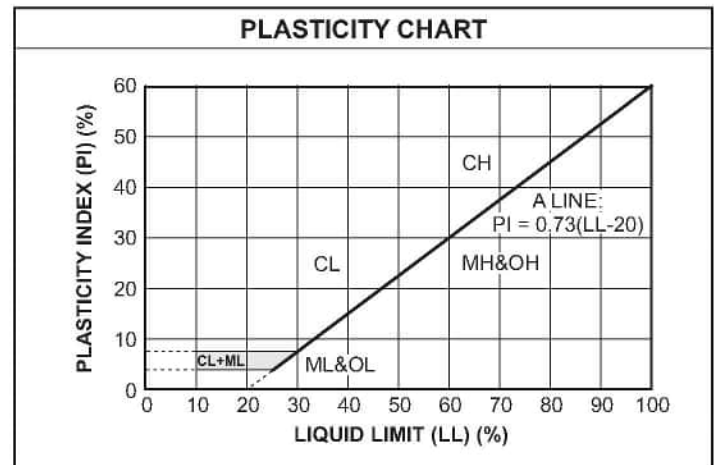
engineering sciences, inc.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
<b>COARSE-GRAINED SOILS</b> (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravels (Less than 5% fines)		
<b>GRAVELS</b> More than 50% of coarse fraction larger than No. 4 sieve size	 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
Clean Sands (Less than 5% fines)		
<b>SANDS</b> 50% or more of coarse fraction smaller than No. 4 sieve size	 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
<b>FINE-GRAINED SOILS</b> (50% or more of material is smaller than No. 200 sieve size.)		
<b>SILTS AND CLAYS</b> 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
<b>SILTS AND CLAYS</b> 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
<b>HIGHLY ORGANIC SOILS</b>	 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:** Elk Rapids - Mitchell Street Improvements  
**PROJECT NO.:** 2021150002  
**PROJECT LOCATION:** Mitchell Street, Elk Rapids, MI  
**CLIENT:** The Village of Elk Rapids  
**DRILLING COMPANY:** Gosling Czubak **RIG:** CME-75  
**DRILLER:** M.G. Allen **LOGGED BY:** R. Farve

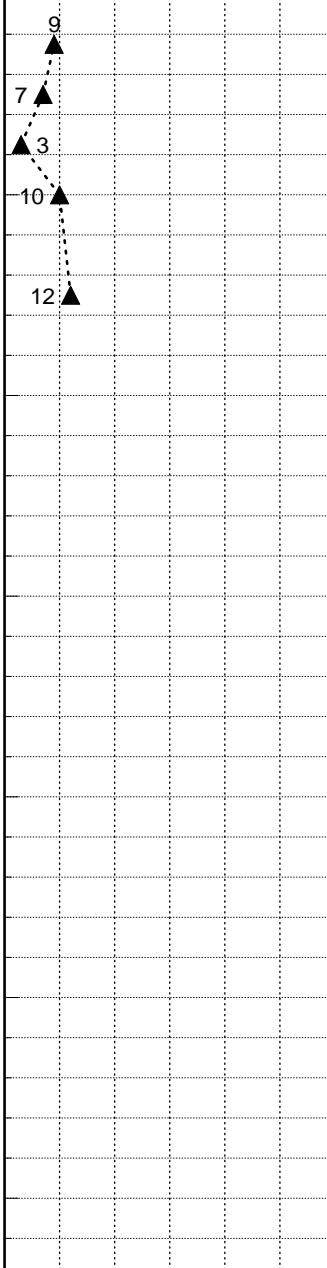
**LOG OF BORING: SB-1**

**GROUND ELEVATION:** 0 **DATE:** 12/15/21  
**DRILLING LOCATION:** Refer to Site Plan  
**DRILLING METHOD:** 4.25-inch (I.D.) Hollow-Stem Auger  
**BOREHOLE DIAMETER (IN):** 10"+/- **TOTAL DEPTH (FT):** 15  
**STATIC WATER LEVEL:** 4 **CAVING DEPTH:** 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 %
0	[Cross-hatch pattern]	Asphalt Road Surface	0									
	[Dotted pattern]	Sub-Base Fill Material	.33	SS1	18	4	5					
	[Dotted pattern]	Fine to medium SAND - little gravel - frequent wood debris - occ. bricks - loose - dark brown/black - moist strong naphtha odor [FILL]		SS2	18	3	4					
				SS3	18	3	4					
				SS4	18	2	2					
-10	[Dotted pattern]	Fine to medium SAND (SP) - trace silt - very loose to loose - dark brown/black - wet - strong naphtha odor	10			1	3					
	[Dotted pattern]	Fine to medium SAND (SP) - trace gravel - loose to medium dense - dark brown/black - wet - strong naphtha odor		SS5	18	4	6					
							4	4				
-20		Clayey silty SAND (SC/SM) - trace gravel - medium dense - brown - wet - little naphtha odor	14				4					
		Boring terminated at 15 ft.					8					

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



Borehole was backfilled with augered soil cuttings. Asphalt hole patch was used where necessary.

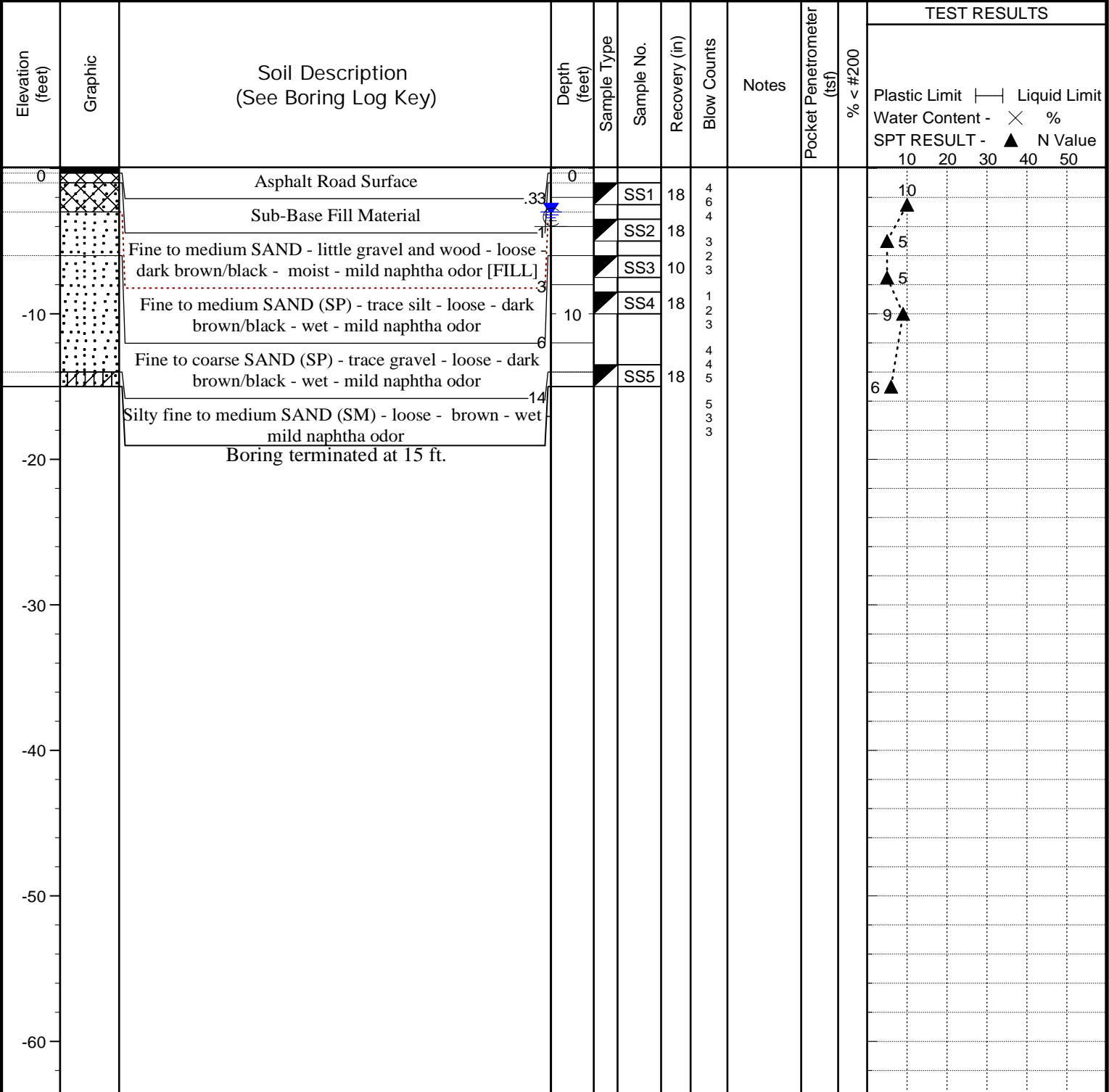


**PROJECT:** Elk Rapids - Mitchell Street Improvements  
**PROJECT NO.:** 2021150002  
**PROJECT LOCATION:** Mitchell Street, Elk Rapids, MI  
**CLIENT:** The Village of Elk Rapids  
**DRILLING COMPANY:** Gosling Czubak **RIG:** CME-75  
**DRILLER:** M.G. Allen **LOGGED BY:** R. Farve

**LOG OF BORING: SB-2**

**GROUND ELEVATION:** 0 **DATE:** 12/15/21  
**DRILLING LOCATION:** Refer to Site Plan  
**DRILLING METHOD:** 4.25-inch (I.D.) Hollow-Stem Auger  
**BOREHOLE DIAMETER (IN):** 10" +/- **TOTAL DEPTH (FT):** 15  
**STATIC WATER LEVEL:** 3 **CAVING DEPTH:** 4

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



Borehole was backfilled with augered soil cuttings. Asphalt hole patch was used where necessary.



**PROJECT:** Elk Rapids - Mitchell Street Improvements  
**PROJECT NO.:** 2021150002  
**PROJECT LOCATION:** Mitchell Street, Elk Rapids, MI  
**CLIENT:** The Village of Elk Rapids  
**DRILLING COMPANY:** Gosling Czubak **RIG:** CME-75  
**DRILLER:** M.G. Allen **LOGGED BY:** R. Farve

**LOG OF BORING:**

**SB-3**

**GROUND ELEVATION:** 0 **DATE:** 12/15/21  
**DRILLING LOCATION:** Refer to Site Plan  
**DRILLING METHOD:** 4.25-inch (I.D.) Hollow-Stem Auger  
**BOREHOLE DIAMETER (IN):** 10" +/- **TOTAL DEPTH (FT):** 15  
**STATIC WATER LEVEL:** 3 **CAVING DEPTH:** C 6

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 %
0		Asphalt Road Surface	0									
		Sub-Base Fill Material	0.33		SS1	10	2 2 1					3
		Fine to medium SAND - little gravel - frequent wood debris - occ. bricks - very loose - dark brown/black - moist - strong naphtha odor [FILL] Wet below 3'	1		SS2	8	1 WOH					1
			8		SS3	8	1					2
			10		SS4	10	2 1 1					3
		Peat and Marl - frequent wood fragments - very loose - wet - strong naphtha odor										
		Fine to medium SAND (SP) - occ. wood fragments - loose - dark brown/black - wet - strong naphtha odor	8		SS5	18	1 2					7
			Silty fine to medium SAND (SM) - trace gravel and clay medium dense - brown - wet - little naphtha odor	14				5 2 5				
		Boring terminated at 15 ft.										

Borehole was backfilled with augered soil cuttings. Asphalt hole patch was used where necessary.