ADVERTISEMENT FOR BIDS

CITY OF GRAND HAVEN
LEAD SERVICE LINE REPLACEMENT PROJECT

The City of Grand Haven (Owner) is requesting Bids for the construction of the following Project:

Lead Service Line Replacement Project
Engineer Project No. 26-1174

Bids for the construction of the Project will be received at the **Grand Haven City Hall** located at **519 Washington Avenue, Grand Haven, MI 49417** until **Wednesday**, **December 2, 2026** at **10:00 AM** local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

Replacement of public and private side water service lines, and associated restoration, in the City of Grand Haven.

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

https://www.abonmarche.com/bids/

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

The Issuing Office for the Bidding Documents is:

Abonmarche Consultants
11 North 6th Street
Grand Haven, MI 49417

Prospective Bidders may obtain or examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of 8:00 AM – 5:00 PM and may obtain copies of the Bidding Documents from the Issuing Office as described below. Printed copies of the Bidding Documents may be obtained from the Issuing Office by paying a fee of $25.00 for each set. Bidding Documents may be purchased from the Issuing Office during the hours indicated above. Cost does not include shipping charges.

A pre-bid conference for the Project will be held on **Wednesday, November 18, 2026,** at **10:00 AM** at **519 Washington Avenue, Grand Haven, MI 49417.** Attendance at the pre-bid conference is encouraged but not required.

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

This Advertisement is issued by:

Owner:	**City of Grand Haven**	Engineer:	**Abonmarche Consultants**
By:	**Mike England**	By:	**Leah Bectel, PE**
Title:	**Public Works Director**	Title:	**Project Manager**
Date:	**November 4, 2026**		

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CONTRACT DOCUMENTS AND
SPECIFICATIONS FOR:

CITY OF GRAND HAVEN
LEAD SERVICE LINE REPLACEMENT PROJECT

OWNER:

CITY OF GRAND HAVEN
519 WASHINGTON AVENUE
GRAND HAVEN, MICHIGAN 49417
P: (616) 842-3210

ENGINEER:

ABONMARCHE
11 NORTH SIXTH STREET
GRAND HAVEN, MICHIGAN 49417
P: (616) 847-4070

NOVEMBER 2026
ENGINEER PROJECT NO. 26-1174

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LIST OF DRAWINGS

The drawings which are applicable to the work to be performed under this contract and which are referred to in the contract documents as “the plans” or “plans” are identified as follows:

City of Grand Haven
Lead Service Line Replacement Project
Engineer Project No. 26-1174

1. Title Sheet
2. Standard Details & Notes – 1
3. Columbus Avenue – 1
4. Columbus Avenue – 2
5. Columbus Avenue – 3
6. Pennoyer Avenue – 1
7. Pennoyer Avenue – 2
8. Pennoyer Avenue – 3
9. Pennoyer Avenue – 4
10. Slayton Avenue – 1
11. Slayton Avenue – 2

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This Advertisement is issued by:

Owner:	**City of Grand Haven**	Engineer:	**Abonmarche Consultants**
By:	**Mike England**	By:	**Leah Bectel, PE**
Title:	**Public Works Director**	Title:	**Project Manager**
Date:	**November 4, 2026**		

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INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

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

A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.

2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.

2.04 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.

2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.

2.06 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader. It is the intent of the Engineer and Owner

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that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:

A. Past project experience in lead service line replacements in Michigan communities. Please state the municipality and approximate number of water services replaced on each project.

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.

ARTICLE 4—PRE-BID CONFERENCE

4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

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

5.01 *Site and Other Areas*

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

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5.02 *Existing Site Conditions*

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

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

B. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

C. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established

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by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

D. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

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

5.06 *Other Work at the Site*

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

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

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

A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

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

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

A. Engineer: Abonmarche Consultants
Contact: Leah Bectel, PE
Email: lbectel@abonmarche.com

B. Technical questions must be submitted via email and shall be entitled "Grand Haven Lead Service Line Replacement Project - RFI."

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

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

ARTICLE 8—BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **five (5%)** percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.

9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of

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material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

11.02 Bidders shall include with their bid a list of the Subcontractors or Suppliers proposed for the Project.

11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the

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Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

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

12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

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

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

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

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

13.02 *Allowances*

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

ARTICLE 14—SUBMITTAL OF BID

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

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

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

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.

15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid,

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and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

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

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 *Evaluation of Bids*

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

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

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

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

ARTICLE 19—BONDS AND INSURANCE

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

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

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

ARTICLE 20—SIGNING OF AGREEMENT

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

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SECTION 00 41 43
BID FORM FOR CONSTRUCTION CONTRACT

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

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:
City of Grand Haven – Clerk's Office
519 Washington Avenue
Grand Haven, MI 49417
www.grandhaven.org
Phone (616) 842-3210

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

ARTICLE 2—ATTACHMENTS TO THIS BID

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

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Past Project Experience as Described in Article 3 of Instructions to Bidders

ARTICLE 3—BASIS OF BID—UNIT PRICES

3.01 *Unit Price Bids*

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

(SEE BID FORM ON FOLLOWING PAGE)

EJCDC® C-410, Bid Form for Construction Contract.
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Lead Service Line Replacement Project – City of Grand Haven					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Bid Unit Price**	**Bid Amount**
1	Mobilization, Max. $50,000	LSUM	1	$	$
2	Internal Plumbing Reconfiguration	Allow	1	$25,000	$25,000
3	Curb and Gutter, Rem	Ft	410	$	$
4	Sidewalk, Rem	Syd	20	$	$
5	Exploratory Investigation, Vertical	Ft	100	$	$
6	Pavt, Rem, Modified	Syd	335	$	$
7	Subbase, CIP	Cyd	125	$	$
8	Aggregate Base, 8 inch	Syd	425	$	$
9	Maintenance Gravel, LM	Cyd	50	$	$
10	HMA, 5EML	Ton	90	$	$
11	Conc Pavt, Misc, Nonreinf, 6 inch	Syd	100	$	$
12	Driveway, Nonreinf Conc, 6 inch	Syd	55	$	$
13	Curb and Gutter, Conc, Det C4	Ft	410	$	$
14	Sidewalk, Conc, 4 inch	Sft	115	$	$
15	Maintaining Traffic	LSUM	1	$	$
16	Slope Restoration, Non-Freeway, Type E	Syd	1,210	$	$
17	Water Serv, 1 inch, Modified	Ft	9,230	$	$
18	Curb Stop and Box	Ea	175	$	$
19	Private Water Serv, 1 inch, Conn to Ex	Ea	175	$	$
20	Water Main Corp Replacement, 1 inch	Ea	15	$	$
Total of All Unit Price Bid Items					$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

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ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

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

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

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in

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the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

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

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

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

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

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

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

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

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

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c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

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

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BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

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

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

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

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SECTION 00 43 13

BID BOND (PENAL SUM FORM)

Bidder Name: Address *(principal place of business)*:	**Surety** Name: Address *(principal place of business)*:
Owner Name: **City of Grand Haven** Address *(principal place of business)*: **519 Washington Avenue** **Grand Haven, MI 49417**	**Bid** Project *(name and location)*: **Lead Service Line Replacement Project** **Grand Haven, MI** Bid Due Date: **December 2, 2026**
Bond Penal Sum: Date of Bond:	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder _____ *(Full formal name of Bidder)* By: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:	Surety _____ *(Full formal name of Surety) (corporate seal)* By: _____ *(Signature) (Attach Power of Attorney)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:
Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.	

EJCDC® C-430, Bid Bond (Penal Sum Form).
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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
    3.2. All Bids are rejected by Owner, or
    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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SECTION 00 51 00

NOTICE OF AWARD

Date of Issuance:			
Owner:	City of Grand Haven	Owner's Project No.:	
Engineer:	Abonmarche Consultants	Engineer's Project No.:	26-1174
Project:	Lead Service Line Replacement Project		
Contract Name:	Lead Service Line Replacement Project		
Bidder:			
Bidder's Address:			

You are notified that Owner has accepted your Bid dated **_____, 2026** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Replacement of public and private side water service lines, and associated restoration, in the City of Grand Haven.

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

An unexecuted Agreement accompanies this Notice of Award electronically.

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 **one** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.

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

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

Owner:	**City of Grand Haven**
By *(signature)*:	_____
Name *(printed)*:	Michael England
Title:	Public Works Director

Copy: Engineer

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SECTION 00 52 43

AGREEMENT BETWEEN OWNER AND CONTRACTOR

FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between City of Grand Haven ("Owner") and _____ ("Contractor").

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

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **The Project includes replacement of public and private side water service lines, and associated restoration, in the City of Grand Haven.**

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Lead Service Line Replacement Project**

ARTICLE 3—ENGINEER

3.01 The Owner has retained Abonmarche Consultants, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Abonmarche Consultants, Inc.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

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

4.02 *Contract Times: Work Days*

A. Bidder agrees that the Work will be substantially complete no later than June 18, 2027

B. Bidder further agrees that the Work will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions as follows:

i. Within an additional 10 days, but no later than June 30, 2027

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

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

1. *Substantial Completion:* Contractor shall pay Owner $2,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $2,000 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to complete the work within the allowed duration, failure to attain timely Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

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

ARTICLE 5—CONTRACT PRICE

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

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

SEE ATTACHED BID

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

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

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6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. 90 percent of the value of the Work completed (with the balance being retainage).

1) If 50 percent or more of the Work has been 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. 50 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

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

6.03 *Final Payment*

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

6.04 *Consent of Surety*

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

6.05 *Interest*

A. All amounts not paid when due will bear interest at the rate of 0.0 percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.

2. Bonds:

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a. Performance bond (together with power of attorney).

b. Payment bond (together with power of attorney).

3. General Conditions.

4. Supplementary Conditions.

5. Specifications as listed in the table of contents of the project manual (copy of list attached).

6. Drawings listed on the attached sheet index.

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

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

a. Contractors Bid (pages _____ to _____, inclusive).

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

a. Notice to Proceed.

b. Work Change Directives.

c. Change Orders.

d. Field Orders.

e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the

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Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

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

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

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

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

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

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

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

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

8.03 *Standard General Conditions*

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

SAMPLE

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O:\Projects\2026\26-1174 Grand Haven Lead Service Line Replacements Project\06 SPECS\1_Front End\00 52 43 C-520_2018.docx

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

This Agreement will be effective on December , 2026 (which is the Effective Date of the Contract).

Owner:	Contractor:
_____ *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
	*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
*(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	License No.: _____ *(where applicable)*
	State: _____

SAMPLE

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SECTION 00 55 00
NOTICE TO PROCEED

Owner:	The City of Grand Haven	Owner's Project No.:	
Engineer:	Abonmarche Consultants	Engineer's Project No.:	26-1174
Contractor:		Contractor's Project No.:	N/A
Project:	Lead Service Line Replacement Project		
Contract Name:	Lead Service Line Replacement Project		
Effective Date of Contract:			

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **_____** pursuant to Paragraph 4.01 of the General Conditions.

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

In accordance with the Agreement:

The date by which Substantial Completion must be achieved is **June 18, 2027,** and the date by which readiness for final payment must be achieved is **June 30, 2027.**

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

Obtain all required permits.

Owner:	**City of Grand Haven**
By *(signature)*:	
Name *(printed)*:	Michael England
Title:	Public Works Director
Date Issued:	

Copy: Engineer

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SECTION 00 61 13.13
PERFORMANCE BOND

Contractor Name: Address *(principal place of business)*:	**Surety** Name: Address *(principal place of business)*:
Owner Name: **City of Grand Haven** Mailing address *(principal place of business)*: **519 Washington Avenue** **Grand Haven, MI 49417**	**Contract** Description *(name and location)*: **Lead Service Line Replacement Project City of Grand Haven** Contract Price: Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☒ None ☐ See Paragraph 16

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

Contractor as Principal	Surety
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
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 is considered plural where applicable.

EJCDC® C-610, Performance Bond.
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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

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5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

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

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **None**

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SECTION 00 61 13.16
PAYMENT BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name: **City of Grand Haven**	Description *(name and location)*: **Lead Service Line Replacement Project City of Grand Haven**
Mailing address *(principal place of business)*: **519 Washington Avenue Grand Haven, MI 49417**	Contract Price:
	Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☒ None ☐ See Paragraph 18

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

Contractor as Principal	Surety
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title:	Title:
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
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 is considered plural where applicable.

EJCDC® C-615, Payment Bond.
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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
    5.1. Claimants who do not have a direct contract with the Contractor
        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
    7.2. Pay or arrange for payment of any undisputed amounts.
    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

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8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **None**

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

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

5. *Bidder*—An individual or entity that submits a Bid to Owner.

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

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

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

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

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

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

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

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

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

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

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

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

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

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

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

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

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

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

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

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

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

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

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

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

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

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

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

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

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

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

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

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

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

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

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43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

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

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

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

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

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

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

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1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

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

1. does not conform to the Contract Documents;

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

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

E. *Furnish, Install, Perform, Provide*

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

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

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

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

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F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

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

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

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

2.02 *Copies of Documents*

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

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

2.03 *Before Starting Construction*

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

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

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

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

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

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

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

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

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

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

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

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inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

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

B. *Resolving Discrepancies*

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

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

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

3.04 *Requirements of the Contract Documents*

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

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

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

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

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established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

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

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

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

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

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

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

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

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

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

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

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

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

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

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

5.01 *Availability of Lands*

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

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

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

5.02 *Use of Site and Other Areas*

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

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

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

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

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

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

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

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

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

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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

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

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

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

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

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

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

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3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

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

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

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

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

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

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

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

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of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

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

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

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

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

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

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

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

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

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

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

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

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

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

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

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

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

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

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

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

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L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

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4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

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

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

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Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

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

7.03 *Labor; Working Hours*

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

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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

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

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

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

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

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

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

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

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

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

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

4) is not objectionable to Owner.

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

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

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

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

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

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

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

7.06 *Substitutes*

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

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

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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

    a. will certify that the proposed substitute item will:

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

        2) be similar in substance to the item specified; and

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

    b. will state:

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

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

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

    c. will identify:

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

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

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

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

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

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

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

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

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

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

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H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

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7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

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

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

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7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

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3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

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d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

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9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

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D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

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E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

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

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

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ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

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

10.04 *Engineer's Authority*

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

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

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

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

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

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ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

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B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

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1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

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and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

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2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

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losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

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or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

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submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

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significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

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d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

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

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

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appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

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

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18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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

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

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

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

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

C. *Evidence of Owner’s Insurance:* After receipt from Contractor of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner in this Contract (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.02 *Copies of Documents*

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

A. Owner shall furnish to Contractor two (2) printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

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

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

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6.02 *Insurance—General Provisions*

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

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

6.03 *Contractor's Insurance*

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

D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds, in addition to Owner and Engineer, the following: The City of Grand Haven, all elected and appointed officials, all employees and volunteers, agents, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof, Abonmarche Consultants, Inc. and its employees thereof. It is understood and agreed by naming the City of Grand Haven as additional insured, coverage afforded is considered to be primary and any other insurance the City of Grand Haven may have in effect shall be considered secondary and/or excess.

E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

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

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

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.
    b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.

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5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).

6. Any limitation or exclusion based on the nature of Contractor's work.

7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

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

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

Automobile Liability	**Policy limits of not less than:**
Bodily Injury	
Each Person	$1,000,000
Each Accident	$1,000,000
Property Damage	
Each Accident	$1,000,000
[or]	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

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

Excess or Umbrella Liability	**Policy limits of not less than:**
Each Occurrence	$3,000,000
General Aggregate	$3,000,000

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

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was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $**3,000,000** after accounting for partial attribution of its limits to underlying policies, as allowed above.

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

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

6.05 *Property Losses; Subrogation*

SC-6.05 Delete Paragraph 6.05 and all subparagraphs and insert the following in its place:

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), **will not require** provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

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

1. Regular working hours will be Monday thru Friday, 7:00 a.m. to 7:00 p.m.
    a. Saturdays count as regular working days per 2020 MDOT Standard Specifications for Construction
2. Owner's legal holidays are as follows:

    Memorial Day: Friday, May 28, 2027 thru Monday, May 31, 2027

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

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

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

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as any work on Sunday or any legal holiday. The work shall be reimbursed at a rate of $80/hr.

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ARTICLE 8—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

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

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.

2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. *Liaison*

   a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

   b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

   c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.

4. *Review of Work; Defective Work*

   a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.

   b. Observe whether any Work in place appears to be defective.

   c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.

5. *Inspections and Tests*

   a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

   b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests:* Review Applications for Payment with Contractor.

7. *Completion*

   a. Participate in Engineer's visits regarding Substantial Completion.

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b. Assist in the preparation of a punch list of items to be completed or corrected.

c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

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

13.01 *Cost of the Work*

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

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

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

a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than $1,000

13.03 *Unit Price Work*

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

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

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a. the extended price of a particular item of Unit Price Work amounts to five percent (5%) or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than twenty-five percent (25%) from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

15.03 *Substantial Completion*

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

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

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

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

17.02 *Arbitration*

A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of $100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when

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institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.

C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.

D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.

E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.

F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.

G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;

3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and

4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.

H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

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17.03 *Attorneys' Fees*

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

17.03 *Attorneys' Fees*

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

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CITY OF GRAND HAVEN

COORDINATION CLAUSE

ABONMARCHE: MJL 1 OF 1 10/27/2026

The Contractor's attention is called to the requirements of cooperation with others as covered in Article 104.07 of the 2020 MDOT Standard Specifications for Construction.

The Contractor shall take due account of all such work and shall arrange his methods of operation and storage of materials and equipment so as to cause a minimum of interference with the work to be performed by other Contractors.

No claims for extra compensation or adjustments will be allowed for coordination efforts.

The following Contracts may be in effect during the life of this Project and will require direct coordination:

Contract: 2027 Resurfacing Project
Owner: City of Grand Haven

This project is expected to be underway during parts of the Grand Haven Lead Service Line Replacement Project in the spring of 2027. Maintenance of traffic coordination may be needed to ensure all detours and closures are clear. Trucking routes should avoid this construction area during the work.

CITY OF GRAND HAVEN

PROGRESS CLAUSE

ABONMARCHE:MJL 1 OF 1 11/04/2026

The Contractor shall start work on the date agreed upon with the Engineer. No work shall be undertaken prior to **January 1, 2027**. In no case shall any work be commenced prior to receipt of formal Notice of Proceed by the City.

Work shall be substantially complete by June 18, 2027. Final completion including clean-up and restoration shall be completed by June 30, 2027.

The Contractor shall submit a detailed construction schedule identifying work activities, crew assignments, and key milestones for review and approval by the City and Engineer.

Mandatory biweekly progress meetings will also be held between the Contractor, City, and Engineer to monitor progress, budget, and address resident comments/concerns.

The approved low bidder(s) for the work covered by this proposal will be required to participate in a pre-construction meeting with local agency owner representatives to work out a detailed progress schedule. The schedule for this meeting will be set within one week after the award. The Engineer will arrange the time and place for the meeting.

The named subcontractor(s) for Designated and/or Specialty Items, as shown in the proposal, are recommended to be at the scheduled meeting if such items materially affect the work schedule.

The Progress Schedule shall include, as a minimum, the controlling work items for completion of the project and the planned dates that these work items will be controlling operations. When specified in the bidding proposal, the date the project is to be opened to traffic as well as the final project completion date shall also be included in the project schedule. If the bidding proposal specifies other controlling dates, these shall also be included in the Progress Schedule.

Failure on the part of the Contractor to complete all work on this project by the date(s) listed above, will result in the assessment of Liquidated Damages in accordance with Subsection 108.10 of the 2020 MDOT Standard Specifications for Construction.

CITY OF GRAND HAVEN

NOTICE TO BIDDERS
UTILITY COORDINATION

ABONMARCHE:MJL 1 OF 1 11/04/2026

a. Description. The Contractor shall cooperate and coordinate construction activities with the Owners of utilities as stated in Section 104.08 of the 2020 MDOT Standard Specifications for Construction. In addition, for the protection of underground utilities, the Contractor shall follow the requirements in Section 107.12 of the 2020 MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 of the 2020 MDOT Standard Specifications for Construction.

For protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall dial 1-800-482-7171 or 811 a minimum of three full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Members will thus be routinely notified. This does not relieve the Contractor of the responsibility of notifying utility Owners who may not be a part of the "Miss Dig" alert system.

b. Public Utilities. The following Public Utilities may have facilities located within the Right-of-Way:

Sewer and Water:
City of Grand Haven
1120 Jackson Street
Grand Haven, MI 49417
Logan Cuddington
(616) 847-3493

Gas:
Michigan Gas
1708 Eaton Drive
Grand Haven, MI 49417
Todd Subka
(616) 844-7519

Electric:
Grand Haven BLP
1700 Eaton Drive
Grand Haven, MI 49417
Robert Shelley
(616) 607-1263

Telephone:
AT&T
245 East 24th Street
Holland, MI 49423
Rick Arendsen
(616) 392-7017

Cable:
Charter Communications
1433 Fulton Street
Grand Haven, MI 49417
Brad Kulicamp
(616) 844-7519

Pipeline:
Wolverine Pipeline Co.
8075 Creekside Dr., Ste. 210
Portage, MI 49024
Duncan Macleod
(616) 916-0055

Fiber Communications:
Comcast
Rachel Gentry
(248)514-8613

The Owners of existing service facilities that are within grading or structure limits will move them to locations designated by the Engineer or will remove them entirely from the Right-of-Way. Owners of Public Utilities will not be required to move additional poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Engineer that such poles or structures constitute a hazard to the public or are extraordinarily dangerous to the Contractor's operations.

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC
PERMANENT SIGNING AND PAVEMENT MARKING

a. Description. This work consists of all labor, materials, and equipment required to maintain traffic in accordance with this Special Provision for replacement of public and private water services (and associated work) throughout the City of Grand Haven, Ottawa County.

b. General. Maintain traffic according to the MDOT 2020 Standard Specifications for Construction, including any Supplemental Specifications, and as specified herein.

1. Notify the Project Engineer a minimum of 10 business days prior to the implementation of any detours, road closures, bridge closures, ramp closures, or lane closures and major traffic shifts.

2. Coordinate operations with Contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

3. City of Grand Haven maintenance crews and/or contract maintenance agencies may perform maintenance work within or adjacent to the Construction Influence Area (CIA). The Grand Haven Department of Public Works and/or contract maintenance agency will coordinate their operations with the Engineer to minimize the interference.

c. Construction Influence Area (CIA). The CIA includes the right-of-way of the following roadways, within the approximate limits described below:

1. On various streets and right-of-ways throughout the City of Grand Haven as detailed in the Plans.

2. Include in the CIA the rights-of-way of any intersecting roads and ramps adjacent to the work zone for a distance noted in signing standards.

d. Traffic Restrictions.

1. Perform work during daytime and nighttime hours as directed in the construction staging (Stage Construction) section of this special provision. Work shall be performed between 7 AM and 9 PM. Work shall be permitted Monday thru Friday during the noted hours, unless otherwise approved via written consent from the Owner and Engineer.

2. Remove lane closures in accordance with the Michigan Department of Transportation mobility requirements during the Memorial Day Holiday observances.

3. A lane closure shall be removed from the through roadway as directed by the Engineer due to inclement weather conditions that would cause an unsafe traffic

situation. A lane closure shall not be placed in the through roadway as directed by the Engineer due to inclement weather conditions that would cause an unsafe traffic situation.

4. Do not completely block intersections of public roads. Conduct intersection work part width. Restore access to driveways and streets at the end of each day.

5. Do not occupy any part of the active traffic lane when utilizing a shoulder closure with personnel or equipment. Avoid this situation or use a lane closure.

6. Cover (or remove) existing regulatory, warning, and construction signs that are not applicable during construction.

7. Construction signing that refers to work zone speed shall be covered when work at a location is planned to be inactive for a period greater than two working days or as directed by the Engineer.

8. A lack of work activity for more than one week requires the removal and replacement of lane closures with all the costs borne by the Contractor.

9. Provide continuous access for pedestrians. Construct no more than one sidewalk on either side of the road at one time. Utilize maintenance gravel, pedestrian barricades, and sidewalk closed signs as required to define pedestrian routing.

10. The Contractor must submit a work zone traffic control plan to the Engineer in accordance with Section 104 of the MDOT 2020 Standard Specifications for Construction. The Engineer will have seven (7) calendar days to review the plan for acceptance or provide comments for plan revisions required to obtain acceptance. At a minimum, the plan shall include the proposed ingress/egress locations for construction equipment and vehicles, traffic control devices that will be utilized to warn the motoring public of ingress/egress locations, and measures that will be taken to ensure compliance with the plan. No work shall begin prior to acceptance of the work zone traffic control plan. Additional time required to obtain an accepted work zone traffic control plan shall not be cause for delay or impact claims. All costs associated with obtaining an acceptable plan, providing and executing all parts of the accepted plan including required traffic control devices, or resolving an incomplete or unacceptable plan shall be borne by the Contractor.

11. Do not store equipment or materials within the clear zone, as directed by the Engineer.

12. Restrict access to streets from side roads for short durations at specific locations as the Engineer directs. Where an intersection is closed or partially closed, allow the adjacent side streets one block to the north and south to remain open to traffic. No more than two minor side streets can be closed at any one time.

13. Restore undercuts or excavations immediately adjacent to active traffic lanes to no less than a one-on-four slope at the end of each working period unless otherwise

approved by the Engineer. Require and provide fencing to protect open trenches during non-working hours as part of the trenching item utilized

e. Stage Construction. Base the traffic control required by this Special Provision for work throughout the City on the sequence of operations contained in the staging plans. Use an alternate traffic control plan, subject to review and approval by the Engineer.

1. Stage I –Water Service Replacements

   A. Work Hours. Daytime Work.

   B. Scope.

      (1) Conduct sawcut removal of pavement, curbs, and/or sidewalks as required for the proper setting of trenchless boring equipment.

      (2) Perform public and/or private water service work and connections.

      (3) Perform all restorative grading and subbase/base work

      (4) Perform sidewalk, driveway, curb and gutter, and/or concrete pavement installation.

      (5) Perform HMA surface installation.

      (6) Perform turf restoration work.

   C. Traffic Pattern: Maintain local traffic within the work limits of the Project. Provide notice to the Engineer in advance of driveway closures or other access restrictions for review and approval.

      (1) Perform and stage no more than 20 water service installations at a given time within the Project area. Ensure all areas waiting for restoration of pavement are provided with maintenance gravel to provide a passable surface for vehicular traffic.

f. Traffic Control Devices.

1. General.

   A. Conform all traffic control devices and their usage to the Michigan Manual of Uniform Traffic Control Devices (MMUTCD). This document can be found at the following website:

   B. https://mdotjboss.state.mi.us/TSSD/getSubCategoryDocuments.htm?prjNumber=2682785&category=MMUTCD&subCategory=2025%20MMUTCD&subCategoryIndex=subcat2MMUTCD&categoryPrjNumbers=3013114,1403854,2682785,1403855,3013113

C. During construction, maintain access to all commercial and residential drives.

2. Temporary Signs.

A. Place temporary sign spacing and taper lengths as shown on attached Typical 101-GEN-SPACING-CHARTS.

B. Place ground driven sign supports as shown on attached Traffic and Safety Standard Plan Special Detail WZD-100-A. Refer to Traffic and Safety Standard Plan WZD-125-E for portable supports.

C. Include (#) W20-1 ("ROAD WORK AHEAD") signs in the quantities, to place on ramps or intersecting roads in advance of construction areas as the Engineer directs.

D. Mount all temporary signs at a five-foot minimum bottom height in uncurbed areas and seven-foot minimum bottom height in curbed or pedestrian areas.

E. Consider distances shown between construction warning, regulatory, and guide signs shown on the typicals as approximate. Signs may require field adjustment, as the Engineer directs.

F. Fabricate all temporary signs with legends and symbols flush to the signs face and do not extend beyond the sign borders or edges.

G. Mount all temporary signs that will be in place for more than 14 days on driven posts.

H. When a portable construction sign is no longer applicable, remove it or lay the sign down with legs pointed in the same direction as traffic flow and with its feet off and laid flat.

I. The Federal Highway Administration (FHWA) requires all signs to be NCHRP 350 crashworthy. The contractor shall submit the FHWA approved details for the temporary sign supports used on the project and have approval by the Engineer before the start of work.

J. Use Type C Lighted Arrows (min 48 inch x 98 inch) to merge traffic and secure by elevating the tires above the ground, or use wheel chocks or sandbags.

3. Temporary Sign Overlays on Overhead Signs

A. Fabricate, install, and remove temporary sign overlays on existing signs with the Pay Item for Sign, Type B, Temp, Prismatic, Furn. Do not let fastening devices such as nails, staples, screws or adhesive materials come in direct contact with reflective sheeting. Devise a method that holds the temporary overlay in place but does not come into contact with the sheeting on the face of the sign.

4. Channelizing Devices.

A. Use plastic drums with fluorescent sheeting on tangent sections and curves, shoulder closures, and as channelizing devices within tapers and lane shifts.

g. Measurement and Payment. Maintain traffic according to Sections 812 and 922 of the MDOT 2020 Standard Specifications for Construction:

1. Estimated quantities for maintaining traffic on this project are based on the suggested sequence of operations contained in the staging plans and described in this special provision. All payment for work described and detailed in this section to maintain traffic shall be paid for as “Maintaining Traffic” as a LSUM per the basis of payment schedule below. This shall include all costs to furnish and maintain signage, lighted arrows, barreled/channelizing devices, and traffic regulators (where required). This also includes the cost of any other minor traffic devices not otherwise specifically indicated but required to safely maintain traffic throughout the Project.

BASIS OF PAYMENT	PAYMENT AMOUNT
Project Startup - Initial Progress Payment	25%
Completion of Project	75%

2. All cost of additional signing or maintaining traffic devices required to expedite the construction will be borne by the Contractor.

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
RESIDENT COMMUNICATION COORDINATION

ABONMARCHE:MJL 1 OF 1 11/04/2026

a. Description. This work consists of coordinating and documenting all communication between the Contractor and property owners and occupants for the water service line replacements shown on the plans. The work includes scheduling, post-replacement flushing instructions, complaint response, and record keeping.

b. Materials. The Contractor shall furnish and deliver via door hanger the following notice materials. Submit drafts of all notices and forms to the Engineer for City approval at least 5 working days before first use. Contractor will not distribute any notice that has not been approved.

1. **Door hangers**. For scheduling and water shutoff notices.

2. **Post-Replacement Instructions.** Includes the anticipated date of any restoration and post-replacement flushing instructions.

Each notice shall include the Engineer's project contact and the Contractor's 24-hour contact phone number.

The City will provide any phone numbers and emails on file for the addresses in the scope for Contractor use in scheduling replacements.

c. Construction. Provide notices to the property owner and document at each address in the following order. Where the owner and occupant differ (for example, rental properties), notify both.

1. **Scheduling Notice**. Deliver a door hanger at least 24 hours before work at the address, stating the expected work date and water shutoff time.

2. **Post-Replacement Instructions**. Deliver in person on the day the water service is replaced and explain to the resident where possible. If no one is home, leave instructions at the door.

<u>It is the Contractor's responsibility to contact and schedule all work with the occupant.</u>

Records of all communication between the Contractor and occupants to be maintained by the Contractor. Records of communication to be submitted to the Engineer at the Engineer's request.

d. Measurement and Payment. Payment shall be included in other items of work.

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
OAK WILT PRECAUTIONS

ABONMARCHE:MJL 1 OF 1 11/04/2026

a. Description. This work consists of protecting the existing oak tree population from the Spread of Oak Wilt in accordance with Section 201 of the 2020 MDOT Standard Specifications for Construction and as modified herein.

The requirements of this special provision will go into effect if the following conditions are present:

1. The stumps of any removed tree are left in place after April 1st.

2. The bark of any tree or limb not designated for removal is damaged at any time during construction.

b. Materials. Emulsified asphalt tree wound sealant, paint, or dressing capable of forming a flexible barrier against the intrusion of insects, fungus, or mold spores.

c. Construction. All removed trees shall be completely removed or trimmed and dressed in manner that prevents the spread of Oak Wilt.

Apply tree wound sealant to the exposed wood of any stumps resulting from felled trees or any damage inflicted to any tree designated to remain at any time during construction.

Apply dressing to stumps or wounds within 1 hour of felling a tree or damaging a tree.

d. Measurement and Payment. Payment shall be included in other items of work.

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
PAVT, REM, MODIFIED

ABONMARCHE: MJL 1 OF 1 11/04/2026

a. Description. This work shall be done in accordance with the requirements of section 204.03 of the MDOT 2020 Standard Specifications for Construction and as modified herein.

b. Materials. None Specified

c. Construction. Remove entire depth of existing HMA, concrete pavement, rubblized concrete, brick pavers, or a combination thereof, regardless of thickness as part of this pay item.

Saw cutting to construct butt joints with existing pavement and as deemed necessary by the Engineer, shall be included with this pay item. To the greatest extent possible, saw cuts and butt joints shall be smooth, flush and free from broken edges and other deterioration. All costs for secondary cuts or new saw cuts to remove deteriorated and broken down edges shall be borne by the Contractor.

Existing Roadway Cross Sections and/or soil borings in the plans provide representative samples of the existing pavement sections.

Properly dispose of all removed materials.

d. Measurement and Payment. The completed work as described will be measured and paid for at the contract unit price using the following contract item (pay item):

Pay Item	**Pay Unit**
Pavt, Rem, Modified	Square Yard

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
WATER SERVICES

a. Description. The work consists of replacing water services at the locations shown on the plans. The work includes the public portion of the service from the water main to the curb stop, and the private portion from the curb stop to the connection inside the structure. All work shall be completed in accordance with the City of Grand Haven Water Distribution System Specifications, except as modified herein.

b. Materials. Furnish materials in accordance with Part 1.02 of the City of Grand Haven Water Distribution System Specifications. Water service pipe shall be 1-inch diameter Type K Copper, unless otherwise shown on the plans.

c. Construction. Construct water services in accordance with Part 1.03 of the City of Grand Haven Water Distribution System Specifications and the following:

1. Corporation Stops: Contractor shall replace the corporation stop only if necessary. Otherwise, reconnect the new service to the existing corporation stop.

2. Installation Method: The service may be installed by open cut, directional bore, or pipe pulling, at the Contractor's option.

3. Existing Service: Remove the existing service when needed. Abandon the services in place, cut and capped, unless otherwise directed by the Engineer.

d. Measurement and Payment. The completed work as described will be measured and paid for at the contract unit price using the following contract items:

Pay Item	**Pay Unit**
Water Main Corp Replacement, 1 inch	Each
Water Serv, 1 inch, Modified	Ft
Private Water Service, 1 inch, Conn to Ex	Each
Curb Stop and Box	Each

Water Main Corp Replacement, 1 inch will be measured as each corporation stop replaced. The unit price includes excavation and backfill, removal of the existing corporation stop, furnishing and installing the new corporation stop, a service saddle if required, and tapping the main.

Water Serv, 1 inch, Modified will be measured in place along the centerline of the pipe. The unit price includes all labor, equipment, and materials, including copper pipe and fittings; excavation and backfill; bracing or sheeting; dewatering; connection to the corporation stop and curb stop; removal or abandonment of the existing service; and disposal of waste. The unit price is the same regardless of installation method. The Contractor shall be required to document photos of the new water service at each connection point replaced in the GIS Field Map provided by the Engineer. The tablet or mobile device and the ARCGIS Creator License needed to access the GIS Field Map shall be provided by

the Contractor. Curb stop and boxes will be installed with water services, however, payment will be under the item **Curb Stop and Box**. If a new corporation stop is required, payment will be under the item **Water Main Corp Replacement, 1 inch.**

Private Water Service, 1 inch, Conn to Ex is to be measured in place as each completed interior connection. The unit price includes all labor, equipment, and materials for the installation of pipe and connection to the first shut off valve inside the structure or 18 inches inside the structure, whichever is shortest. The unit price also includes scheduling and coordination with the plumbing inspector, all permit and inspection fees, and providing inspection documentation to the Engineer.

Curb Stop and Box shall be paid at the contract unit price per each and shall include installation of a curb stop, curb stop box, excavation, backfill, and disposal of waste.

CITY OF GRAND HAVEN

SPECIAL PROVISION
FOR
INTERNAL PLUMBING RECONFIGURATION

ABONMARCHE: MJL 1 of 1 10/28/2026

a. Description. This work includes any interior utility reconfiguration, except internal water service connection and exterior routing work - which is paid for under other water service pay items. This work includes any plumbing work that is beyond the first shutoff valve or beyond the first 18" inside the home and requires a licensed plumber to perform the work.

This work also includes obtaining entry permission from the homeowner and scheduling any associated work. It also includes obtaining and paying for any local plumbing permits or approvals, where required.

Structures requiring internal plumbing reconfiguration will be chosen during the project, at the discretion of the City. With this work scope being undetermined, the extent of this work scope is not indicated on the plans.

b. Materials. Water and sanitary sewer services materials as applicable per special provisions of this contract and the provided City standards**.**

c. Construction. The methods and materials required to accomplish this work must be determined by the Contractor, subject to approval by the Engineer, before initiation of internal plumbing reconfiguration of each selected house. Good faith estimates of costs required to reconfigure the internal plumbing of each house shall be submitted and approved by the City and Engineer prior to starting work inside a given structure.

g. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	**Pay Unit**
Internal Plumbing Reconfiguration (Est Cost)	Allowance

Internal Plumbing Reconfiguration (Est Cost) includes all material and labor needed to reconfigure internal plumbing for selected structures per the direction of the City and Engineer.

Costs will be reimbursed in-kind as invoiced by various parties undertaking relevant work items relating to this special provision. Eligible costs include those invoiced directly by the contractor for their materials and labor as tracked using force account methods. Additionally, subcontractor services shall be invoiced directly by said subcontractor along with a maximum 10% contractor markup. Invoices must be submitted and then approved by the City and Engineer to receive compensation under this pay item.

A fixed cost for this pay item is indicated on the bidding form for equality in comparing bids for this undetermined work scope.

APPENDIX A:

CITY OF GRAND HAVEN WATER DISTRIBUTION SYSTEM SPECIFICATIONS (5/08/2023)

Drafted: 05/08/2023

CITY OF GRAND HAVEN

WATER DISTRIBUTION SYSTEM SPECIFICATIONS

WSSN – 2750

CITY OF GRAND HAVEN
WATER DISTRIBUTION SYSTEM SPECIFICATIONS
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APPENDICES

APPENDIX A – JOINT RESTRAINT TABLE

APPENDIX B – WATER MANHOLE COVER PRODUCT SHEET

APPENDIX C – WATER SERVICE DETAIL SHEETS

PART 1 - WATER DISTRIBUTION PIPING AND APPURTENANCES

1.01 GENERAL

A. Section Includes
   1. Submittal requirements for distribution materials and installation acceptance.
   2. Testing and post-construction documentation requirements for water distribution installation.
   3. Required water distribution materials for installation.
   4. Installation methods for water distribution components.

B. References
   1. American Society of Mechanical Engineers:
      a. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
   2. ASTM International:
      a. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
      b. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
      c. ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
      d. ASTM A536 – Standard Specification for Ductile Iron Castings
      e. ASTM A674 – Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
   3. American Water Works Association:
      a. AWWA C104 - ANSI Standard for Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
      b. AWWA C105 - ANSI Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.
      c. AWWA C110 - ANSI Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water.
      d. AWWA C111 - ANSI Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
      e. AWWA C115 - ANSI Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
      f. AWWA C150 - ANSI Standard for Thickness Design of Ductile Iron Pipe.
      g. AWWA C151 - ANSI Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
      h. AWWA C153 - ANSI Standard for Ductile-Iron Compact Fittings for Water Service.
      i. AWWA C502 - Dry-Barrel Fire Hydrants.
      j. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
      k. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.
      l. AWWA C550 - Protecting Epoxy Interior Coating for Valves and Hydrants.

m. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
n. AWWA C651 – Standard for Disinfecting Water Mains.

4. National Fire Protection Association:
   a. NFPA 1963 - Standard for Fire Hose Connections.
5. National Sanitation Foundation:
   a. NSF 14 - Plastic Piping System Components and Related Materials
   b. NSF 60 – Drinking Water Chemicals Health Effects
   c. NSF 61 - Drinking Water System Components - Health Effects.

C. Submittals
1. Product Data: Submit manufacturer's latest published literature including illustrations, installations instructions, operations instructions, maintenance instructions, and parts lists to the Department of Public Works Streets and Utilities Manager for review and approval. Approval must be obtained before installation of any water distribution material specified.
2. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

D. Quality Assurance
1. General:
   a. All material which may come in contact with water intended for public use in the public water supply shall be certified to meet ANSI/NSF Standard 61.
   b. All plastic materials which may come in contact with water intended for public use in the public water supply shall be certified to meet ANSI/NSF Standard 61 and be certified to meet ANSI/NSF Standard 14.
   c. All chemicals which may come in contact with water intended for public use in the public water supply shall be certified to meet ANSI/NSF Standard 60.
2. Pipe and Fittings: Pipe and fittings shall be marked with manufacturer's name, pipe classification, nominal size, pressure rating, and ANSI/NSF 61 certification.
3. Valves and hydrants: Mark valve and hydrant bodies with manufacturer's name and pressure rating.
4. Provide independent certification that materials and coatings comply with the following NSF 14 and NSF 61Standards. All materials shall be stamped or otherwise marked to indicate compliance with and NSF 61 (and NSF 14 for plastic pipes and fittings).
5. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this section.

E. Delivery Storage and Handling
1. Deliver and store valves in shipping containers with labeling in place.
2. Prepare hydrants, valves, and accessories for shipment according to AWWA Standards. Seal hydrant and valve ends to prevent entry of foreign matter into product body.
3. Store products in areas protected from weather, moisture, or possible damage. Do not store products directly on ground. Handle products to prevent damage to interior or exterior surfaces.
4. Block individual and stockpiled pipe lengths to prevent moving.
5. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.
6. Do not place pipe flat on ground. Cradle to prevent point stress.

7. Store UV sensitive materials out of direct sunlight.

F. System Acceptance

1. General:
   a. Application for City acceptance shall be accompanied by the required Acceptance Submittals enumerated below.
   b. Address comments or corrections noted by the City, uncover and obtain additional information, and undertake any necessary corrective action noted by City Staff. The above shall be complete, reviewed, and approved prior to the Final Acceptance of the Work.
2. Authority of Acceptance:
   a. New Work: Final Acceptance of new work will be made by the Department of Public Works Streets and Utilities Manager.
   b. Existing Systems: Where the City is considering taking on maintenance and/or ownership of an existing system, furnish all Testing Reports and Project Record Documents enumerated below to the Department of Public Works Streets and Utilities Manager. Upon receipt and approval of these documents, a recommendation will be submitted by the Department of Public Works Streets and Utilities Manager. Final acceptance of the existing system will be made by the City Council.
3. Product Submittals
   a. Before ordering, delivery, and installation of any water distribution material specified, the Contractor shall submit product specification and data sheets to the Department of Public Works Streets and Utilities Manager for review and approval.
4. Test Reports
   a. Hydrostatic Pressure and Leakage Test Reports are required to be completed by the Contractor and shall contain the following information:
      1) Date.
      2) Start time and pressure.
      3) End time and pressure.
      4) Description or sketch showing configuration of equipment used.
      5) Calculation of allowable leakage.
      6) Record of actual leakage measured.
   b. Disinfection and Bacteriological Testing Reports shall be completed by Public Works Staff and shall contain the following information:
      1) Disinfection Report:
         a) Type and form of disinfectant used.
         b) Date and time of disinfectant injection start and time of completion.
         c) Test locations.
         d) Name of person collecting samples.
         e) Initial and 24-hour disinfectant residuals in treated water in ppm for each outlet tested.
         f) Date and time of flushing start and completion.
         g) Disinfectant residual after flushing in ppm for each outlet tested.
      2) Bacteriological Report:

a) Date issued, project name, and testing laboratory name, address, and telephone number.
b) Time and date of water sample collection.
c) Name of person collecting samples.

3) Test locations.
a) Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
b) Coliform bacteria test results for each outlet tested.
c) Certify water conforms, or fails to conform, to bacterial standards of Michigan Department of Environment, Great Lakes and Energy,

5. Documents: The design engineer shall record the following on As-Built Drawings. A draft set shall be sent to Public Works staff for review and comments. Final copies shall then be delivered to Public Works in PDF and paper copy formats.
a. Any variations from approved plans, including but not limited to:
1) location of water main
2) location and configuration of connection to existing water main
3) deviations from standard depth or depth at crossings
4) type and configuration of components and materials
5) discovery of any uncharted utilities or unexpected subsoil conditions
b. As-Built Measurements:
1) Main – distance measured along main between Fittings (tees, bends, reducers, etc.), Valves, and Hydrants (including valves and fittings).
2) Services:
a) Tap: This is the distance measured along the main from the corporation stop to nearest main fitting.
b) L: This is the length of the service line from the corporation stop to the curb stop or meter pit.
c) Tail: For services stubbed for future connection, this is the length of service line installed beyond the curb stop.
3) Witnesses:
a) Curb Stop Boxes: for each curb stop box include two witness dimensions:
(1) Use manholes, catch basins, hydrants, or property corners.
(2) Do not witness curb stop boxes to trees, fences, utility poles or other non-permanent structures or private structures.
b) Main Valves: for each water main valve, include:
(1) Two witness dimensions to each other water main valve in the surrounding 100 feet.
(2) Two witness dimensions to other permanent structures
(a) Use manholes, catch basins, hydrants, or property corners.
(3) Do not witness valves to trees, fences, utility poles or other non-permanent structures or private structures.

6. Global Positioning System (GPS) Measurements shall be provided to the City of Grand Haven by the design engineer in addition to traditional as-built measurements discussed above. Coordinates of valves, hydrants, curb stops, fittings, and connections shall be provided electronically to the Department of Public Works Streets and Utilities Manager.

a. Drawing files shall be submitted in the following projection and datum:
   1) NAD 1983 State Plane Michigan South FIPS 2113 Intl Feet
      Projection: Lambert Conformal Conic
      False Easting: 13123359.58005249
      False Northing: 0.00000000
      Central Meridian: -84.36666667
      Standard Parallel l: 42.10000000
      Standard Parallel_2: 43.66666667
      Latitude Of Origin: 41.50000000
      Linear Unit: Foot (0.304800)
   2) Geographic Coordinate System:
      GCS North American 1983
      Datum: D North American 1983
      Prime Meridian: 0
   3) Vertical datum shall be in: NAVD 1988 also expressed in international feet
   4) If for any reason, a drawing is not in NAD 1983 Michigan State Plan South projection, the drawing must include reference and coordinates to the 2 nearest Public Land Survey System (PLSS) section comers. Documentation should be provided as to the drawing's projection and any scale factors used in the drawing.

      A developer has the option of complying with the above requirement or pay for the City's Engineer to integrate the new utilities into the City's GIS mapping system if it cost effective to do so. An estimated cost to do such work will be placed on deposit with the Utility Division before the project is permitted by the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

b. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

c. Provide Operation and Maintenance Data for valves and hydrants.

1.02 WATER DISTRIBUTION MATERIALS

A. Water Mains

1. Pipe: Water Main piping shall be centrifugally-cast ductile iron pipe in accordance with AWWA C151/ANSI A21.51. The pipe shall meet the requirements of thickness class 52 in accordance with ANSI/AWWA C150/A21.50.
   a. The interior of the pipe shall be cement-lined in accordance with ANSI/AWWA C104/A21.4 American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water. Interior asphalt coating is permitted.
   b. The exterior of the pipe shall be coated with an asphaltic seal coat in accordance with ANSI/AWWA C151/A21.15.
   c. The manufacturer's name, pipe classification, nominal size, pressure rating, and ANSI/NSF 61 certification shall be clearly marked in each section of pipe.
2. Joints: For buried service, joints shall be push-on or mechanical joint with gaskets accordance with ANSI/AWWA C111/A21.11.
   a. Gaskets shall be virgin SBR rubber per ASTM D 2000 MAA610 unless specified otherwise on the plans. Where soil or groundwater contamination are present, furnish Acrylonitrile Butadiene (NBR/Buna-N/Nitrile) or

Fluorocarbon/Fluoroelastomer (FKM) gaskets as called for on the plans or as directed by the Department of Public Works Streets and Utilities Manager.

3. Electrical Continuity:
   a. General: A device to provide electrical conductivity between pipe segments shall be furnished on all new water main and also on all cut-ins to existing water main. Thawing devices shall be capable of carrying a minimum of 150 amperes of current through the pipe joint without damage to the gasket in the joint.
   b. Devices
      1) Serrated Silicon Bronze Wedges: Serrated wedges can be used with push-on joint: in accordance with the manufacturer's recommendation. Each wedge shall be driven into the opening between the plain end and the bell until snug. When four or more wedges are used, they shall be inserted side-by-side in pairs.
         a) Schedule:
            (1) Pipes up to 12 inches in diameter: Two (2) per joint.
            (2) Pipes larger than 12 inches in diameter: Four (4) per joint (installed in pairs)
      2) Cable or Strip Conductor: May be used for all types of joints. Conductor shall be sufficiently flexible to withstand minor ground and pipe movement. When it is necessary to bond conductor strips to cut lengths of pipe in the field, the strips shall be welded to the pipe by exothermic welding.
      3) Conductive Gaskets: Gaskets having metal contact strips which are molded or inserted into the gasket may be used in lieu of wedges in push-on joints. The gasket seating surface should be thoroughly cleaned prior to assembly.
4. Polyethylene Encasement: Polyethylene encasement and appurtenances shall be in accordance with ANSI/AWWA C105/A21.5.
5. Ball and Socket Piping for River Crossing Applications: Ball and Socket piping shall be centrifugally-cast ductile iron pipe in accordance with AWWA C151/ANSI A21.51. The pipe shall meet the requirements of thickness class 55 in accordance with ANSI/AWWA C150/A21.50.
   a. Ball and Socket joints shall be a push-on type ball and socket joint utilizing a first grade synthetic rubber gasket. The joint shall be capable of up to 15-degree full turning deflection without separations, leakage or restriction of the pipe waterway. Joint restraint shall be provided by a boltless means, which is locked against accidental disengagement of the restraining component. All structural joint components (bell, ball and retainer) shall be ductile iron meeting the physical requirements of ANSI/AWWA C110/A21.10. Pipe shall be furnished with the necessary gaskets, lubricant, and retainer locking accessories.
   b. The interior of the pipe shall be cement-lined in accordance with ANSI/AWWA C104/A21.4 American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
   c. The exterior of the pipe shall be coated with an asphaltic seal coat in accordance with ANSI/AWWA C151/A21.15. The manufacturer's name, pipe classification, nominal size, pressure rating, and ANSI/NSF 61 certification shall be clearly marked in each section of pipe.
   d. The river crossing joint shall be a push-on type ball and socket joint utilizing a first grade synthetic rubber gasket. The joint shall be capable of up to 15-degree full turning deflection without separations, leakage or restriction of the pipe waterway.

Joint restraint shall be provided by a boltless means, which is locked against accidental disengagement of the restraining component. All structural joint components (bell, ball and retainer) shall be ductile iron meeting the physical requirements of ANSI/AWWA C110/A21.10. Pipe shall be furnished with the necessary gaskets, lubricant and retainer locking accessories.

e. Mechanical Joint connections shall be used to connect the end of the End connections shall be as specified under, Pipe and Fittings.

f. Pipe shall be Clow F-141 Boltless River Crossing Pipe, U.S. Pipe USIFLEX, or Equal approved by the Department of Public Works Streets and Utilities Manager.

B. Fittings

1. Mechanical Joint Fittings: Water main fittings shall be ductile-iron compact fittings in accordance with ANSI/AWWA C153/A21.53 with mechanical joint ends in accordance with ANSI/AWWA C111/A21.11 as specified in paragraph 2.01.B of this specification. Fittings shall be furnished with interior and exterior coating of fusion bonded epoxy in accordance with ANSI/AWWA C116/A21.16 or asphaltic seal coat in accordance with ANSI/AWWA C151/A21.15.
   a. Pressure Rating: 3-inch through 24-inch fittings shall be rated for 350 psi working pressure. 30-inch through 48-inch fittings shall be rated for 250 psi working pressure
2. Welded Bossed Outlets: Welded bossed outlets for ductile iron water main may be accepted only for 24" and larger.

C. Joint Restraint

1. General: Joints shall be restrained by mechanical joint restraint devices or restraining gaskets in accordance with the following. Refer to **APPENDIX A** for restraint schedule.
   a. Mechanical joint restraint devices shall conform to either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53. Mechanical joint restraint shall consist of a following retainer gland design with integral gripping wedges meeting the requirements of ANSI/AWWA C110/A21.10. Gland body, wedges, and actuators shall be constructed of ASTM A536 ductile iron.
   b. Restraining Gaskets shall conform to ANSI/AWWA C111/A21.11 and shall be rated for the working pressures based on the performance requirements of ANSI/AWWA C111/A21.11. Restraining gaskets shall consist of a resilient elastomeric gasket with integral stainless steel retaining wedges designed to prevent separation of the joint due to thrust. Restraining gaskets shall be furnished in an alternate material color (red or yellow, etc.) to differentiate from standard gaskets. Color shall be readily visible before and after joint assembly to aid in identification.
   c. Proprietary restrained joint pipe systems must be approved in writing from the Department of Public Works Streets and Utilities Manager
2. Pressure Rating: The devices shall be rated for a minimum working pressure rating of 150psi.
3. Restraint by rodding must be approved in writing by the Department of Public Works Streets and Utilities Manager prior to use. The number and size of tie-rods shall be determined by the size and working/test pressures to which the restraint will be subjected. Provide calculations from the manufacturer of the restraint system.
4. Products:
   a. Glands for Mechanical Joint Pipe or Fittings:
      1) Series 1100 MEGALUG by EBAA Iron Sales, Inc.

b. New Push-On Joint Pipe:
   1) Series1700 MEGALUG Harness by EBAA Iron Sales, Inc.
c. Existing Push-on Joint Pipe:
   1) Series 1100HD Split MEGALUG Restraint Harness by EBAA Iron Sales, Inc.
d. Restrained Sleeve Type Couplings:
   1) Series 3800 MEGA-COUPLING by EBAA Iron Sales, Inc.
   2) 400RG by Romac Industries
e. Flanged-End Adapter:
   1) Series 1000 E-Z Flange Adapter
   2) Series 2100 MEGAFLANGE by EBAA Iron Sales, Inc.
f. Restraining Gaskets
   1) Fast-Grip – Amarillo Gasket by American Cast Iron Pipe Company
   2) Field Lok 350 – Red Gasket by US Pipe Company

D. Tapping Sleeves
   1. Tapping sleeves shall be fabricated two-piece stainless steel in accordance with ANSI/AWWA C223 and MSS SP 124. The body and constructed from AISI Series 304 or 304L stainless steel alloy secured with removable stainless-steel bolts and nuts. Outlet shall be in accordance with ANSI/AWWA C228 Class SD constructed from AISI Series 304 stainless steel. Outlet flange shall be ANSI 150 lb. flange with tapping flange connection in accordance with MSS SP 60.
   2. Sleeves up to 24 inches shall be rated for a minimum of 200 psi working pressure. Sleeves 30 inches and larger shall be rated for a minimum of 200 psi working pressure.
   3. Bolts, nuts, and washers shall be Series304 stainless steel or better. Plastic washer shall also be furnished to prevent galling between stainless steel nuts and washers.
   4. Gaskets shall be virgin SBR rubber per ASTM D 2000 MAA610 unless specified otherwise on the plans. Where soil or groundwater contamination are present, furnish Acrylonitrile Butadiene (NBR/Buna-N/Nitrile) or Fluorocarbon/Fluoroelastomer (FKM) gaskets as called for on the plans or as directed by the Department of Public Works Streets and Utilities Manager.
   5. Tapping sleeves shall be JCM Industries Model 432 or Romac Industries SST or SST III.

E. Valves and Appurtenances:
   1. Gate Valves: Valves shall be manufactured and tested to meet the requirements of ANSI/AWWA C515. Valves shall be listed by Underwriters Laboratories and shall meet the requirements of Standard UL262 & FM1130.
      a. The rated working pressure of the valve shall be 250 psi.
      b. The body, bonnet, wedge, and seal plate shall be made of domestically poured ductile iron, and in accordance with ASTM A536. The wedge shall be totally encapsulated in rubber with polymer ear caps. This rubber coating shall be permanently bonded to the ductile iron wedge casting and shall meet ASTM D429 tests for rubber to metal bonding. No paint shall be allowed in the wedge and the wedge must not be hollow. Containment of the stem nut must only be on two sides, to facilitate easy removal.
      c. The stem and stem nut shall be made of high strength manganese bronze manufactured and machined domestically in the USA. The stem must have an integral thrust collar. Stainless steel stems are not acceptable. Polymer thrust washers shall be located above and below the integral collar of the stem. Stainless

steel thrust washers are not acceptable. There shall be two O-ring seals in the seal plate which shall be replaceable, if required, with the valve in the fully open position at rated working pressure and one below the integral collar. All gaskets shall be O-ring seals. O-rings set in a cartridge shall not be allowed. O-ring seal between upper bonnet and lower body must be set in a "U" type channel. A grit seal must be present above seal plate to prevent dirt intrusion. All fasteners to be 304 or 316 Stainless Steel, Zinc plated as a "lubricator" to prevent galling. Socket head bolts shall not be allowed. All valves shall open LEFT (counter clockwise).

d. The stem seal plate shall be removable to allow stem to be replaced without separating the bonnet from lower body in the event of having to replace the stem. No exposed bolt/nut slots used to fasten seal plate to upper body shall be allowed.

e. The body, bonnet and seal plate shall be epoxy coated in accordance with ANSI/AWWA C550 certified to NSF61. This coating shall be on the interior and the exterior valve. The manufacturers' name, valve size, year of manufacture, pressure rating ("250W"), C515, "DI", UL, FM, and MADE IN USA shall be cast on the valve. No separate tags/plates attached to the valve body stating this shall be allowed.

f. Each valve shall be tested in accordance with ANSI/AWWA C515, UL262 and FM1130. This shall include hydrostatic pressure testing at 500 psi before leaving manufacturing facility.

g. All Resilient Wedge Gate Valves shall be EJ C515 Flow Master.

2. Butterfly Valves: Butterfly valves shall be designed and manufactured in accordance with AWWA C504 with flanged-end connections in accordance with ANSI/AWWA C115. Where a valve vault is not designated on the plans, valves shall be rated for underground service. Flanged to mechanical joint adapters in accordance with paragraph C.4.e of this specification shall be provided for each valve. Underground valves shall be furnished with mechanical joint ends.

   a. Valves shall be rated for 150 psi non-shock working pressure.

   b. The valve body shall be ASTM A126 cast iron with NBR (Buna-N) rubber valve seat providing leak-proof shut-off with the disc. Disc shall be constructed of ASTM A126 cast iron or ASTM A536 Ductile iron with a 304 stainless steel shaft rotation in permanently lubricated bearings.

   c. The interior and exterior of the valve body shall be coated with 6 mils of polyamide cured epoxy in accordance with AWWA C550.

   d. Butterfly valves shall be Groundhog model by Henry Pratt Company.

3. Air Release Valves: Air-release valves shall be in accordance with AWWA C512. Valves shall be nominally sized based on the valve inlet, Connection shall be National Pipe Thread (NPT) connection for valves 3 inches and smaller and an ANSI/AWWA C115/A21.15 flanged end connection for 6-inch valves and larger. Valves shall be UL2575 listed and FM1344 approved.

   a. Valves shall be rated for 300 psi working pressure with drip-tight shutoff at lower pressures.

   b. The valve body shall be ASTM A536 ductile iron with AISI 316 stainless steel float and internal trim. External cover bolts shall be AISI 316 Stainless Steel in accordance with ASTM F593. The orifice button shall be EPDM rubber.

   c. The interior and exterior of the valve body shall be coated with 6 mils of fusion bond epoxy in accordance with AWWA C550.

d. Products: Air release valves shall be manufactured by ARI, APCO, DeZurik or approved equal.

4. Valve Boxes: Shall be screw type, cast iron three sectional adjustable with round bases with an overall length sufficient to permit the top to be set flush with the established pavement or ground surface. The boxes shall be provided with cast iron lids or covers and marked with the word "WATER". The valve boxes shall be designed to withstand heavy traffic.
   a. Base Pattern:
      1) Up to 6 inch valve: #4
      2) 8-inch and 10-inch valve: #6
      3) 12-inch valve and up: #160
   b. Products:
      1) EJ #8560 Series Screw Type 3-piece
      2) Substitutions: Not Permitted
5. Post Indicators:
   a. Cast iron post
   b. Window with "OPEN" or "CLOSED" indicator
   c. Cast iron wrench actuator
   d. Depth of Bury: 6 feet
   e. Products:
      1) NIBCO Model NIP1AUE with Valve as noted in 1.02.E above.
      2) Substitutions: To be reviewed and approved by the Department of Public Works Streets and Utilities Manager.
6. Electrical Continuity: Valves must have a continuity strap in accordance with Paragraph A.3.b.2) of this specification.

F. Fire Hydrants
1. Fire hydrants shall meet or exceed the requirements of ANSI/AWWA C502 Standard for Dry-Barrel Hydrants, Underwriter Laboratories UL 246, Factory Mutual 1510, and must have a 250 psi working pressure rating tested at 500 psi before leaving the manufacturing facility. They shall have a 5-1/4" valve opening and 6" mechanical joint inlet with two drain holes plugged with no lead brass plugs. Hydrants shall have two 2-1/2" hose connections and one 5" (HiHS50-Hydrant) Harrington Integral Hydrant Storz Connection. Storz fitting shall be installed by the hydrant manufacturer. All 2-1/2" nozzle connections shall be National Standard Thread. All nozzles shall be on a removable head with a break flange so that they may be rotated by changing the position of the flange.
2. Brass nozzles must be designed with brass lugs and 0-ring gasket as the means to form a pressure tight compression fit when attached to the hydrant bonnet.
3. Hydrants shall be 6' 0" depth of bury from bottom of inlet pipe to the grade line, unless otherwise specified. Top of hydrants shall be 32 +/- 3 inches above finish earth grade. A 3-foot clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved by the Department of Public Works Streets and Utilities Manager.
4. The color of the hydrants shall be yellow. Those portions of the hydrant above ground shall have two coats of yellow enamel.

5. Hydrants must have one traffic breakaway flange below the upper barrel with a galvanized steel breakable stem coupling located near the ground line to minimize barrel and stem damage from traffic impact. The operating stem must be at least 1-1/4" in diameter.
6. The operating nut shall open left (counter clockwise).
7. Hydrant operating nut must be solid brass, 1.5" pentagon and attached to operating stem utilizing a standard Acme thread at 5 t.p.i. Lubrication of the operating nut must be designed to use food grade grease only. No oil bath operating assembly designs allowed. No "V" threads allowed for operating stem or nut.
8. Fire hydrant bottom brass drip shut off must be attached to the l-1/4" operating stem by means of a 7/16" diameter stainless steel drive lock pin. Bottom brass drip shut off must be a heavy-duty design to enable removal by means of a stem drive seat removal wrench in the event of an obstruction to the seat.
9. The main valve shall be formed of specially molded rubber. The valve assemblies, including seat and guides, shall be lead free brass and must be threaded into a lead free brass liner in the hydrant shoe.
10. Fire hydrant shoes, barrels, and bonnets must be made of ductile iron.
11. All components, iron and bronze, must be cast, manufactured and machined in the USA, and shall have MADE IN USA clearly stated, cast into the exterior of the iron body.
12. All hydrants shall be EJ 5BR250 Water Master Product #55977D, or approved equal, and equipped with a 52" tall, 3/8", red and white reflective coating top, 16" galvanized stud mount, hydrant marker capable of being attached to the hydrant with a flange bolt.

G. Precast Concrete Valve Vaults
1. Precast Concrete Valve Vaults: Doghouse type valve vault structure with flat top slab and an 18 inch hole in the base shall be provided for drainage. Structure shall be in accordance with 5.02.A below.
2. Frames and Covers: Furnish in accordance with 5.02.B below.

H. Pipe Supports and Anchoring
1. Metal for pipe support brackets: Structural steel, galvanized, thoroughly coated with bituminous paint.
2. Metal tie rods and clamps or lugs: Galvanized steel sized in accordance with NFPA 24 thoroughly coated with bituminous paint.

I. Concrete Encasement and Cradles
1. Concrete: Concrete Grade 3000 as defined by Michigan Department of Transportation Standard Specifications for Construction Table 1004-1, 3000 psi 28 day compressive strength, rough troweled finish.

J. Water Service Materials
1. General: Water service lines, valves and fittings shall be in accordance with AWWA C800.
2. Copper Tubing: Copper tubing for use in water services shall be ASTM B88 Type K annealed soft-temper in accordance with federal specification WW-T-799.
3. Service Saddles: ASTM A536 ductile iron body with dual U-bolt straps. U-Bolts and hardware shall be AISI Series 316 stainless steel. Outlet to be threaded with AWWA C.C. tapered threads. Gaskets shall be NBR (Buna-N) per ASTM MBC610. Service saddles shall be NSF 61 certified. Service saddles shall be Romac Model 202U.

4. Corporation Stop Valves: Brass or red brass alloy body conforming to ASTM B62 and ASTM B584. Components in contact with water shall conform to UNS C89833. Corporation Stop valves shall be ANSI:/NSF 61 and ANSI/NSF 372 certified.
    a. Fittings: AWWA/CC Threads x Q CTS Compression
    b. Products:
        1) Up to 2" services: AY McDonald 74701BQ ball valve type.
        2) Substitutions: Not Permitted
5. Curb Stop Valves: Brass or red brass alloy body conforming to ASTM B62 and ASTM B584. Components in contact with water shall conform to UNS C89833. Corporation Stop valves shall be ANSI:/NSF 61 and ANSI/NSF 372 certified.
    a. Fittings: Q CTS Compression x Q CTS Compression
    b. Products:
        1) All curb stops shall be AY McDonald 76100Q
        2) Substitutions: Not Permitted
6. Curb Boxes: Curb boxes shall be three-piece, arch base style curb stops with 1" diameter upper section. The lid and base sections shall be constructed of Cast Iron in accordance with ASTM A48, Class 25. The upper section shall be constructed of steel pipe. All components shall be coated with asphaltic coating
    a. Curb Boxes shall be furnished with 48" rod.
    b. Boxes shall be pentagon nut type
    c. Products:
        1) Up to 1" in diameter: AY McDonald 5607 5'-6" box with 5660 48" rod.
        2) 1.5" and 2" services: AY McDonald 5602 5'-6" box with Tyler Series 6500 Enlarged Base and AY McDonald 5660 48" rod.
        3) Substitutions: Not Permitted
7. Water Service Meter Connections (Indoors):
    a. Copper: ASTM B88, Type K, L, hard drawn.
    b. Copper Horns: Ford No. 3 or 4, Copperhorn; or equal.
    c. Valves:
        1) Inlet Ball Valve:
            a) Ford B11; or equal.
            b) Bronze body, tee head, stem.
            c) O-rings: Buna-N.
            d) Valve Seats: Buna-N.
            e) Ball: Fluorocarbon-coated brass.
    d. Couplings and Fittings: Brass 85-5-5-5 (B 62), flared joints.
8. Residential Meter Pit:
    a. Manufacturer: Ford Plastic Pit Setter for moderate to cold climates.
    b. 1-inch Service
        1) Pit Diameter and Depth: 20-inch diameter x 60-inch deep.
        2) Setting: Standard for double lid cover.
        3) Inlet Valve Type: Angle ball valve.
        4) Outlet Valve Type: No outlet valve.

5) Meter Size: 3/4-inch meter.
6) Type of Inset: PET/CTS pack joint.
7) Type of Outlet: PET/CTS pack joint.
8) Yoke: None
9) Meter Pit Cover: Ford Wabash double lid cover, W3-T, 11-1/2-inch lid for 20-inch tile, locking electronic meter reading.

c. 1.5-inch Service:
1) Pit Diameter and Depth: 36-inch diameter x 60-inch deep.
2) Setting: Standard for double lid cover.
3) Inlet Valve Type: Angle ball valve.
4) Outlet Valve Type: No outlet valve.
5) Meter Size: 1 1/2-inch meter.
6) Type of Inlet: Male Iron Pipe
7) Type of Outlet: Male Iron Pipe
8) Yoke: None
9) Bypass: None
10) Meter Pit Cover: Ford Wabash double lid cover, W3-T, 11-1/2-inch lid for 36-inch tile, locking electronic meter reading.

K. Bedding, Haunching and Initial Backfill Materials
1. Bedding and Cover:
a. Granular material: Granular Material Class II or III conforming to Section 902 of the MDOT Standard Specifications for Construction, Latest Edition. Maximum grain size shall be less than 1.5” in diameter.
b. Special Stone Bedding Material (where specified): Stone/Drainage Aggregate shall be Coarse Aggregate, 6A-AAA,17A, 25A, 26A, or 34RG as shown on the plans and in accordance with Section 902 of the 2012 MDOT Standard Specifications for Construction.
2. Backfill: Granular Material Class III in accordance with the Michigan Department of Transportation Standard Specifications for Construction, Table 902-3.
3. Drainage Aggregate: Drainage Aggregate for valve vault and hydrant drainage shall be course aggregate 6A in accordance with Michigan Department of Transportation Standard Specifications for Construction, Table 902-1.
4. Trench Backfill from 12” above pipe to finish grade: Sound Earth free from topsoil, organic soils, clay, large stones, frozen material.
5. Suitable on site material may be utilized as bedding and cover with approval of the Department of Public Works Streets and Utilities Manager.

L. Accessories
1. Steel rods, bolt, lugs and brackets: ASTM A36/A36M or ASTM A307 Grade A carbon steel.
2. Protective Coating: Coal tar or bituminous coating.

M. Finishing - Steel
1. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.

N. Equipment For Pressure Testing

1. Sufficient to withstand pressures
2. Capable of injecting water into water main during leakage test.

O. Equipment For Electrical Conductivity Testing
1. Portable digital micro-ohm meter capable of measuring resistance to the nearest 0.1 μΩ (micro-ohms).

P. Disinfection Chemicals
1. Chemicals: AWWA B300 and NSF/ANSI Standard 60, Liquid or Tablet Sodium Hypochlorite. (Use of liquid chlorine is not permitted.)

1.03 EXECUTION

A. General
1. The Department of Public Works will operate all distribution system valves. The Contractor shall cut the water main, remove any plugs or caps, and pump the water out of the trench caused by cutting of the main or removal of the plugs or caps. All excavations required shall be made by the Contractor.
2. The Contractor shall give a minimum of seven (7) working days' notice to the Grand Haven Department of Public Works for a request for water shut-off so the Department can notify customers of any service interruption. The Grand Haven Department of Public Works shall determine the time and duration of the shut- off. The Contractor shall continue the work to completion and restore service to the interrupted main. No claim for extra compensation will be considered for overtime due to the hours of shut-off.

B. Examination
1. Determine exact location and size of existing and proposed water distribution infrastructure from drawings; obtain clarification and directions from Department of Public Works Streets and Utilities Manager and City Engineer prior to execution of work.
2. Verify that existing utility water main size, location, and invert are as indicated on Drawings.
3. Verify invert elevations of existing work prior to excavation and installation of water main, valves, hydrant, and accessories.
4. Review and coordinate with Department of Public Works Streets and Utilities manager for any valve operations needed to perform work.

C. Preparation
1. Identify required lines, levels, contours, and datum locations. Locate, identify, and protect utilities to remain from damage. Do not interrupt existing utilities without permission and without making arrangements to provide temporary utility services.
2. Notify Grand Haven Department of Public Works not less than seven (7) working days in advance of proposed utility interruption. Do not proceed without written permission from the Grand Haven Department of Public Works.
3. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs. Use only equipment specifically designed for pipe cutting. The use of chisels or hand saws will not be permitted. Grind edges smooth with beveled end for push-on connections.
4. Remove scale and dirt on inside and outside before assembly.
5. Prepare pipe connections to equipment with flanges or unions.

D. Excavation and Bedding

1. Trenching
    a. Excavate subsoil required for utilities. Remove lumped subsoil, boulders, and rock. Provide a minimum of 4" clearance between pipe and rock, boulders, and large stones. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
    b. When project conditions permit, slope side walls of excavation. When side walls cannot be sloped, provide a trench box, sheeting and shoring to protect excavation as specified in this section. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil. Do not interfere with bearing splay of foundations. Design sheeting and shoring to be removed at completion of excavation work.
    c. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Coarse Aggregate 6A-AAA. Compact to density equal to or greater than requirements for subsequent backfill material.
    d. Hand trim for bell and spigot pipe joints. Remove loose matter.
    e. Dewater trenches as needed for placement of water main piping.
2. Backfilling
    a. Place at least 4 inches of bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth; compact to 95 percent maximum density.
    b. Place initial backfill around pipe to a point 12 inches above the pipe crown using the specified cover material. Backfill around sides and to top of pipe with cover fill; tamp in place and compact to 95 percent maximum density.
    c. Maintain optimum moisture content of fill material to attain required compaction density.

E. Receiving, Handling, Laying Pipe and Accessories
1. Receiving Pipe and Accessories: When received from the carrier and at the time of unloading, the Contractor shall check all pipe and accessories for loss or damage in transit. No shipment of material shall be accepted by the Contractor unless proper exceptions are made on the receipt obtained by the carrier, at the time of delivery, as to loss and/or damage.
2. Handling Pipe and Accessories
    a. The Contractor shall haul, unload, and distribute pipe and accessories along the site of the work. Materials shall be placed in storage if necessary and then distributed. All materials shall be handled with care to avoid damage. All material found during the progress of the work to have cracks, flaws, or other defects will be rejected by the Department of Public Works Streets and Utilities Manager or the authorized inspector, and the Contractor shall promptly remove such defective materials from the site of the work.
    b. The interior of pipe shall be thoroughly cleaned of all foreign matter before being lowered into the trench. Before lowering, and while still suspended, the pipe shall be inspected for defects and rung with a light hammer to detect cracks. Any defective or damaged pipe shall be rejected.
3. Lowering Pipe and Accessories into Trench
    a. The Contractor shall have sufficient and adequate equipment on the site of the work for unloading and lowering pipe and fittings into the trench. Extreme care shall be exercised by the Contractor in handling all pipe, fittings, and special castings so as to

prevent breakage and coating damage. Any significant damage to coating shall be repaired before installation. Under no circumstances shall pipe or fittings be dropped into the trench or so handled as to receive hard blows or jolts.

b. All mud or concentration of dirt shall be removed prior to installation.

c. Pipe shall be lowered only with the use of non-metallic slings, hooks or pipe tongs recommended by the pipe manufacturer.

F. Laying of Pipe

1. Depth of Pipe: The top of the pipe shall be placed between five (5) and six (6) feet below the finish surface of the ground, or between five (5) and six (6) feet below the lowest grade at gutter line of streets or approved by the Department of Public Works Streets and Utilities Manager in unusual circumstances. The Contractor shall not be entitled to any additional compensation because depth is more than specified at certain locations or due to clearances at manholes, or due to unforeseen obstacles, or occasioned in order to avoid undue changes in grade.

2. Pipe Bedding and Initial Backfill:

   a. Excavate trenches in accordance with 3.03.C below, including provisions for sheeting and shoring as needed. Hand trim excavation for accurate placement of pipe to elevations indicated on Drawings.

   b. Shape ditch bottom so that the entire length of pipe barrel is evenly supported. A section not exceeding 12 inches in length may be disturbed in order to remove slings used in handling pipe or for making up pipe joints. Wood block or earth mounds shall not be used under the pipe line for any purpose.

3. Dewatering: The trench shall be completely dewatered before any pipe is laid and shall be kept dry until the joint has been made and the backfill carried to the top of the pipe. Joint areas may be left open for inspection during pressure and leakage tests.

4. Inspection and Cleaning before Installation: All pipe and fittings shall be carefully examined for defects and shall be cleaned of blisters, excess coating from the bell and spigot ends, and shall be free of oil, grease and debris before the pipe is laid.

5. Laying of Pipe: Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. During laying operations no debris, tools, etc. shall be placed in the pipe. At time when pipe laying is not in progress, the open ends of the pipe shall be closed by a water-tight plug. This shall apply during break periods as well as at the end of the construction day. Where laying pipe on grades greater than 2%, pipe shall be laid in the upslope direction.

6. Cutting of Ductile Iron Pipe: Pipe shall be cut at right angles to the center line of the pipe. Cutting shall be done in a neat workman like manner without damage to the pipe or lining and so as to leave a smooth end. All pipes shall be cut with an abrasive wheel, rotary wheel cutter, guillotine pipe saw, a milling wheel saw. Pipe Cutting by means of an Oxyacetylene torch shall not be allowed. The cut end of a pipe to be used with rubber gasket joints shall be beveled by grinding or filing about one-eight inch (1/8") back at an angle of approximately 30° with the center line of the pipe, and any sharp or rough edges shall be removed. Follow pipe manufacturer's recommendations for beveling cut ends.

7. Bell Ends to Face Direction of Laying: Pipe shall be laid with bell ends facing in the direction of laying, unless otherwise directed by the Department of Public Works Streets and Utilities Manager.

8. Assembly of Push-On-Joints: The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket. A thin film of gasket lubricant shall be

applied to either the inside surface of the gasket or the spigot end of the pipe. The spigot end of the pipe shall be entered into the socket with care used to keep the joint from contacting the ground. Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe shall be filed or ground to resemble the spigot end of such pipe as manufactured. Deflection of push-on joint pipe shall not exceed the maximum limits shown of Table 2, AWWA Specifications C-600.

9. Laying Mechanical Joint Ductile Iron Pipe
    a. Pipe assembly and handling shall conform to the manufacturer's recommendations.
    b. Insert spigot all the way into socket. The two pipes should be substantially in alignment while the joint is being assembled. Center spigot in socket. Wet gasket and joint surfaces thoroughly with soapy water.
    c. Slide gasket along the pipe into socket. Hand caulk into place until it is evenly seated in the socket. Always begin seating the gasket at the bottom of the joint and do not apply the gland and bolts until the gasket is definitely in place, especially in the lower half of the joint. The placing of the gasket in the socket serves to center the spigot end of the pipe in the socket which is essential to the making of a first class joint.
    d. Slide gland into position with gland lip bearing on face of gasket. Insert bolts with head bearing on the pipe flange and nuts on the gland. Beginning at the lower half of the joint, run up all nuts with the fingers. Before starting to tighten bolts with wrench, be sure that the gland lip is centered on the face of the gasket.
    e. In tightening the bolts it is essential that the gland be brought up toward the pipe flange evenly maintaining approximately the same distance between the flange and the gland at all points around the socket. Partially tighten the bottom bolts first, and then the top bolt. Next, tighten the two bolts on each side (90°) from top and bottom. Partially tighten the remaining bolts, maintaining approximately the same space between pipe flange and gland. Continue tightening in steps, as above, until each bolt has been tightened to approximately 90 foot lbs. torque.
10. Laying Push-on Joint Ductile Iron Pipe.
    a. Bell must be clean and free of all foreign matter. Brush coat gasket, retaining groove and inner shoulder, with non-toxic joint lubricant.
    b. Insert gasket with solid face toward installer. Use one hand to hold a loop in gasket, the other to tuck remaining portion into its groove. Press gasket firmly into lubricated groove. Pull gasket forward against bell lip to be sure the gasket is completely seated. Apply generous coating of lubricant to the exposed gasket surface. Clean the spigot end of pipe, and grind or file sharp edges which might damage the basket. Lubricant may be applied to the beveled nose of the spigot end.
    c. Place spigot end in the companion bell and provide reasonably straight alignment. Push pipe straight home with the aid of a bar or a jack and choker slings as needed for larger sizes.
    d. Check the assembly. The joint is completely assembled and pressure tight when the strip is no longer visible. Deflection shall be taken after joint is assembled.
11. Backfill:
    a. All pipe shall be bedded and haunched with 6" of compacted bedding material in accordance with paragraph 1.02K.1. Once bedding and haunching of the pipe is complete, initial backfill may be placed in 12-inch lifts to a point 12 inches above the crown of the pipe.

b. Backfill shall be compacted to 95% of maximum unit weight and incidental to the water main item. MDOT Granular Material Class III shall be placed 4" below & 12" above the proposed pipe. Pipe within the 1 on 1 influence of the road shall be MDOT Granular Material Class II or III. All other backfill material shall be suitable material excavated from the trench (other than wet unsuitable clay). It shall be free of cinders, ashes, refuse, sod, organic materials, and boulders, rocks, or pavement in size greater than 6" in any one dimension.

G. Installation – Tapping Sleeves
   1. Install tapping sleeves in accordance with Drawings and in accordance with manufacturer's instructions.

H. Installation - Valves
   1. Install valves in conjunction with pipe laying; set valves plumb.
   2. Provide restrained joints on each end of valves.
   3. Provide buried valves with valve boxes installed flush with finished grade.
   4. Adjustment of Valve Boxes:
      a. Adjustment of Valve Boxes shall be accomplished by removing pavement from around upper section of valve box assembly following leveling course pavement and rotating the stem to bring the lid and frame to the proper grade.
         1) Where valves are located within Asphalt Paved areas, backfilling around valve box shall be performed with Concrete Grade S2 in accordance with MDOT Standard Specifications for Construction.
         2) Concrete backfill shall be placed leveled to match the surface of the leveling course pavement. The surface of the concrete backfill shall be smooth.

I. Installation – Fire Hydrants
   1. Install fire hydrants; provide support blocking and drainage gravel; do not block drain hole unless otherwise directed by the Department of Public Works Streets and Utilities Manager.
      a. Leave drain hole plugged-in areas of poor draining soils, high groundwater, and areas of soil or groundwater contamination.
   2. Set hydrants plumb with pumper nozzle facing roadway; set hydrants with centerline of pumper nozzle 18 inches above finished grade and safety flange not more than 6 inches nor less than 2 inches above grade.
   3. Provide restrained joints at hydrant, valve, fittings and pipe joints of hydrant lead.
   4. After hydrostatic testing, flush hydrants and check for proper drainage. Pump out hydrants with plugged drain holes.

J. Polyethylene Encasement
   1. Encase piping in polyethylene where shown on the plans or as directed by the Department of Public Works to prevent contact with surrounding backfill material.
   2. Install in accordance with AWWA C105.
   3. Terminate encasement 6 inches below grade at hydrants and valve boxes.

K. Restraints
   1. Install joint restraining glands on all mechanical joint ends for hydrants, valves, and fittings
   2. Install joint restraining harnesses for push on joint pipe according to Schedules.

3. Install joint restraints in accordance with manufacturer's instructions.
4. Protect metal restrained joint components against corrosion by applying a coal tar or bituminous coating.
5. Concrete thrust blocks are not permitted unless approved by Department of Public Works Streets and Utilities Manager.

L. Service Connections

1. Preparation: Comply with local plumbing code. The Contractor shall obtain any necessary plumbing permit for each residence and pay all fees. Organize and coordinate a date and time with each residence to receive a new connection. A list of names, addresses, and telephone numbers will be made available to Contractor.
2. Service Leads: Place service saddle for all water services at an angle of 45 degrees from the horizontal. Alignment and Grade: Install services at right angles with street line with a minimum of 5' feet of cover.
3. Perform Service taps in accordance with the following standards: Ductile Iron Water Main: AWWA C600 and DIPRA Installation Guide for Ductile Iron Water Main.
4. Residential Water Connections: Review area where new water service will connect to the existing water service piping at the limits of construction. Verify connection size and provide the necessary compression type adapter fittings for proper connection.
    a. Basement Penetration: Core drill 3-inch maximum hole for 1-inch or 1-1/2-inch copper service. Hole to be minimum of 5 feet below exterior finished grade. Review area where water main will enter house and connect to existing plumbing. Organize and coordinate the temporary removal of all false walls. If basement wall is nonexistent or cannot be drilled, the copper may be fed into the house through the basement floor with mole tunneling equipment. Seal void between hole and copper with Fosrock, Preco Plug, or equal as determined by the Department of Public Works Streets and Utilities Manager.
    b. Existing service lines from wells may not be used for new connections, unless approved by Department of Public Works Streets and Utilities Manager.
    c. Connection of New Service Line: Connect new shut off valve, copper horn, and meter within 3 feet of basement wall. Continue 1-inch copper to existing house plumbing. Connect to maximum pipe size of system. Provide all copper and fittings necessary to make connection. Install remote meter reader in a visible location on the exterior of the home, in a location approved by homeowner. Flush water system until water clears, check all new plumbing for leaks.
        1) Restore temporary removals or damages to the lawn, driveway, or building with like materials.
    d. Remote Meters: If building does not have a basement, an area where meter can be installed inside of the first floor, or has an existing meter pit, utilize a meter pit unless otherwise directed by the Department of Public Works Streets and Utilities Manager Install meter pit in right-of-way in a location approved by the homeowner, or in the location designated on the plans.
        1) Run new copper into the home and install a new shut off valve. Install new copper to the existing house plumbing. Install remote meter reader on exterior of the home, in a location approved by homeowner. Flush water system until water clears, check all new plumbing for leaks.
        2) Restore temporary removals or damages to the lawn, driveway, or building.

5. Disconnection of Existing Well Service Line: Saw cut existing supply line just inside basement wall and plug pipe with threaded or soldered cap. Disconnect bladder tank from house plumbing. Saw cut pipe to tank and cap with threaded or soldered cap.

M. Sequence of Testing

1. Tests for water main shall include continuity testing, flushing, testing, and disinfection and will occur in the following sequence:
   a. Pipe Continuity Testing – See Paragraph N below
   b. High Velocity Flush – See Paragraph O below
   c. Hydrostatic Pressure and Leakage Testing – See Paragraph P below
   d. Disinfection and Bacteriological Testing – See Paragraph Q below
   e. Connection to existing water main – See Paragraph S below
2. Scheduling: If the contractor wishes to have any inspections or testing completed after normal business hours he may request those inspections and will be responsible for any incurred overtime labor or equipment charges by the City. If directed to complete such inspections or testing after hours by the Department of Public Works, it shall be considered to be incidental to the project and all overtime charges incurred by the City shall be at City's expense.

N. Pipe Continuity Testing

1. General - A device to provide electrical conductivity from one pipe length to another shall be furnished on all new water main and also on all cut-ins to existing water main. Thawing devices shall be capable of carrying a minimum of 150 amperes of current through the pipe joint without damage to the gasket in the joint.
2. Testing:
   a. After installation of the mains, backfilling and the hydrostatic pressure tests are completed, the system (water main and hydrants) shall be tested for electrical continuity and current capacity.
   b. It is imperative that all lines and appurtenances be filled with water prior to conductivity testing. The contractor shall coordinate with the Department of Public Works for filling lines with water. The line will be tested in sections between hydrants. The hydrants and hydrant valves will be opened to bleed off any air in the lead. The hydrant will be closed and the hydrant valve left open. Adjacent hydrants will serve as test section termini.
   c. The Contractor will provide electric current of 100 to 150 amperes for the tests. Direct current of 150 amperes shall be passed through the pipeline for a period of five minutes. Current flow through the pipe shall be measured continuously on a suitable ammeter and shall remain steady without interruption or excessive fluctuation throughout the five-minute test. Insufficient current or intermittent current or arcing indicated by large fluctuations of the ammeter needle shall be evidence of defective electrical contact in the pipeline. The cause shall be isolated and corrected. Thereafter, the section in which the defective test occurred shall be re-tested as a unit and shall meet the test requirements to the satisfaction of Department of Public Works Streets and Utilities Manager.
   d. The Contractor shall supply the labor and equipment to perform the test to the satisfaction of Department of Public Works Streets and Utilities Manager, the cost of which shall be considered incidental to the unit price bid per lineal foot for water main. Witness of the tests must be done by the Department of Public Works Streets

and Utilities Manager, who shall give the contractor permission to move on to high velocity flushing once pipe continuity testing is deemed satisfactory and complete.

O. High Velocity Flush
   1. The contractor shall create a proposed configuration and flushing procedure to verify compliance with the following standards:
      a. Minimum Velocity: 2.5 feet per second
      b. Minimum Duration: until 2 times the volume of the flushed water main has been discharged.
   2. Provide and install all temporary appurtenances necessary to inject flushing water. This may include a temporary hydrant and fire hose if needed to achieve adequate flow rate.
   3. Review proposed water source, configuration and flushing procedure with City Engineer and the Department of Public Works Streets and Utilities Manager.
   4. Conduct high velocity flush to remove any debris and contaminants which may have entered pipe during construction. Obtain approval from Department of Public Works Streets and Utilities Manager before moving on to Hydrostatic testing.
   5. Protect discharge from erosion and flooding.

P. Hydrostatic Testing
   1. The contractor shall create a pressure testing plan and review with the City Engineer/ Department of Public Works Streets and Utilities Manager before commencing testing. The Department of Public Works Streets and Utilities Manager shall bear witness to all pressure tests performed by the contractor.
      a. After completion of pipeline installation, including backfill, but prior to final connection to existing system, conduct, in presence of Engineer, concurrent hydrostatic pressure and leakage tests in accordance with AWWA C600.
      b. The maximum allowable length of water main to be tested at one time shall be 1,000 feet or the minimum distance between valves.
      c. Test Pressure: Not less than 150 psi or 50 psi in excess of maximum static pressure, whichever is greater. The contractor shall not raise the pressure in the water main more than 10 psi above the specified test pressure at any time during the test.
      d. Conduct hydrostatic test for at least two-hour duration.
      e. Fill section to be tested with water slowly, expel air from piping at high points. Install corporation cocks at high points. Close air vents and corporation cocks after air is expelled. Raise pressure to specified test pressure.
      f. Observe joints, fittings and valves under test. Remove and renew cracked pipe, joints, fittings, and valves showing visible leakage. Retest.
      g. Correct visible deficiencies and continue testing at same test pressure for additional 2 hours to determine leakage rate. Maintain pressure within plus or minus 5.0 psig of test pressure. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
      h. The contractor shall compute maximum allowable leakage by the following formula:

$$L=\frac{S\cdot D\cdot\sqrt{P}}{148{,}000}$$

Where:
D = nominal pipe diameter in inches;

L = allowable leakage in gallons per hour;
P = average test pressure (psi); and
S = length of pipe to be tested in feet.

Note: for a 2 hour test, multiply "L" by 2 to get the allowable leakage volume in gallons.

i. In the event that the line or section being tested contains pipe of more than one size, the allowable leakage from all joints of each size shall be calculated separately and then added to obtain the total allowable leakage from the entire line or lines.

j. When test of pipe indicates leakage greater than allowed, locate source of leakage, make corrections and retest until leakage is within allowable limits. Correct visible leaks regardless of quantity of leakage.

k. Obtain approval from Department of Public Works Streets and Utilities Manager before moving on to disinfection of water system.

Q. Disinfection Of Potable Water Piping System

1. Preparation: The contractor shall prepare a flushing, disinfection, and sampling plan which identifies the source location of flushing water, method of connection to supply sufficient quantity of flushing water, the location of flushing discharge(s), sequence of valve opening and closing to ensure complete flushing and disinfection of all segments, and the location of sampling taps. Collect samples from each branch and maximum spacing of 1,000 feet. All hydrants and valves shall be operated by Public Works Staff. The contractor's plan shall be submitted to the Department of Public Works Streets and Utilities manager for review and approval before commencing. A representative from Public Works must be present for all items in Section Q.

2. Disinfection: Conduct disinfection in accordance with AWWA C651. Provide and attach all equipment needed to perform the Work of this section. Install temporary sampling taps at needed locations.

   a. Minimum Chlorine Residuals: Initial Concentration shall be 25 mg/L (ppm) free available chlorine with 10 ppm free available chlorine after 24 hours.

   b. Inject Disinfection Chemicals into piping system by continuous feed method.

      1) Calculate injection rate based on water flow rate and required concentration.

      2) Begin flowing potable water through the new main from the beginning of the new main. Inject chemicals into water main at a location not more than 10 feet downstream from the beginning of the new main. Measure chlorine residual at discharge. Adjust water flow rate or chemical feed rate as necessary to achieve initial concentration.

   c. Public Works Staff shall stop flows and operate all valves, including hydrant valves, within the treated section, to ensure disinfection of the appurtenances.

   d. Public Works Staff shall measure initial chlorine residual at each sampling location. Wait 24 hours, then measure final chlorine residual at each sampling location. If final chlorine residual is below minimum, repeat high velocity flush and disinfection.

3. Disinfectant Flush

   a. Conduct flushing in accordance with AWWA C651. Review proposed water source, configuration, and discharge location with Department of Public Works Streets and Utilities manager. Legally dispose of chlorinated water. When chlorinated discharge may cause damage to environment, apply dechlorinating chemical to neutralize chlorine residual in water.

b. Flush heavily chlorinated water from entire system with potable water, after completion of successful disinfection procedures, before bacteriological testing.

c. Measure chlorine residual of supply water. Flush the full volume of the new water main. Measure chlorine residual of the flushing discharge. Continue flushing until chlorine residual at discharge equals the supply water.

d. Protect discharge from erosion and flooding.

4. Bacteriological Testing: Conduct bacteriological testing in accordance with AWWA C651. Collect samples, in sterile bottles supplied from testing laboratory, at each sampling location.

a. Complete the form provided with the sample bottle. Deliver samples to testing laboratory the same day. Samples delivered more than 24 hours after collection may be discarded.

b. Collect and submit repeat samples 24 hours after initial samples.

c. Public Works Staff shall report laboratory results to the contractor. If laboratory results indicate presence of coliform bacteria, repeat disinfection and bacteriological testing. Pay for any additional laboratory testing due to failed test results.

d. Remove temporary sampling taps and install plugs.

R. Repairing Leaks and Breaks

1. Leaks and/or breaks occurring in new water mains installed under this Contract shall be repaired by the Contractor at his own expense during the construction period and during the guarantee period.

2. No stainless steel repair clamps or bell joint leak repair clamps will be permitted.

3. All leaks, breaks, or defective sections of pipe shall be repaired by cutting out the defective section of joint and replacing that section with a length of pipe of equal material.

4. All repair areas shall be rechlorinated and tested for leakage with operating pressure.

S. Connection to Existing Water Main

1. The contractor shall schedule water main tie-ins with the Department of Public Works Streets and Utilities Manager with a minimum advance notice of five (5) working days (3 days for customer notification and 2 days for preparation and delivery of the notification).

2. Make connection to existing water main after disinfection and bacteriological testing has been completed and approved by the Department of Public Works Streets and Utilities Manager. Connect new water main to existing water main in accordance with AWWA C651.

3. Connection to existing water main shall be done only in the presence of Department of Public Works Representatives. If connection is performed by the Water Utility, the work shall be done on a time and materials basis unless otherwise specified. All cut-in sleeves required for connection to existing mains shall be included in the unit price bid for each size of water main.

4. Exercise sanitary construction practices to avoid contamination during this work. If it is suspected that any contamination has occurred during this work, flush the new main from the existing main.

5. The Contractor shall remove all abandoned gate valves, tapping sleeves, valve boxes and all other water main material indicated in the Contract Documents. The cutting of pipe, burning and chipping out of joints shall be started only after permission is given by the Department of Public Works Streets and Utilities Manager.

6. All water main material removed by the Contractor shall be carefully handled. Any waterman material broken by carelessness of the Contractor in removing will be replaced by him. If the material is to be reused by the Contractor, he shall clean it thoroughly inside and outside.
7. If any water main materials are not to be reused, they shall be stored neatly in an area designated by the Department of Public Works. Lead removed shall become the property of the Contractor. All other material shall remain the property of the City of Grand Haven.

T. Field Quality Control

1. The contractor shall be responsible for coordinating laboratory testing of bedding material to determine gradation in accordance with ASTM C117 and ASTM C136.
2. The design engineer shall perform in-place compaction tests of bedding and backfill material in accordance with 3.03.H..4 below.
3. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

PART 2 - DEWATERING

2.01 GENERAL

A. Section Includes

1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations and trenches.
2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations and trenches.
3. Disposing of removed water.
4. Surface Water Control: Removal of surface water within open excavations.

B. System Description

1. Provide dewatering and surface water control systems to permit work to be completed on dry and stable subgrade.
2. Provide monitoring wells and monitoring equipment where needed to obtain meaningful observations of conditions affecting excavation, adjacent structures, and adjacent water wells.
3. Furnish standby equipment stored at Project site and ready for immediate use upon failure of dewatering equipment, in circumstances when failure of dewatering equipment poses immediate danger or threat to safety of persons or integrity of the Work.

C. Performance Requirements

Design dewatering systems to:

1. Lower water table within areas of excavation to permit work to be completed on dry and stable subgrade.
2. Relieve hydrostatic pressures in confined water bearing strata below excavation to eliminate risk of uplift or other instability of excavation.
3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.

4. Prevent loss of fines, quick condition, or softening of foundation subgrade.
5. Maintain stability of sides and bottoms of excavations and trenches.
6. Collect and remove surface water and seepage entering excavation.

D. Quality Assurance

Comply with authorities having jurisdiction for the following:

1. Drilling and abandoning of wells used for dewatering systems.
2. Water discharge and disposal from pumping operations.
3. Obtain State and Local Permits under National Pollutant Discharge Elimination System (NPDES), for storm water discharge from construction sites.

E. Qualifications

1. Installer: Company specializing in performing work of this section and responsible for design, operation, and maintenance of dewatering system.
2. Assume sole responsibility for dewatering and surface water control systems and for loss or damage resulting from partial or complete failure of protective measures and settlement or resultant damage caused by ground water control operations.

F. Sequencing

1. Sequence work to obtain required permits before start of dewatering operations.

G. Coordination

1. Coordinate work to permit all construction operations to be completed on dry stable substrate.

2.02 PRODUCTS

A. Dewatering Equipment

1. Select dewatering equipment to meet specified performance requirements.
2. Dewatering pumps shall be driven by electric motors. Power source shall be batteries or temporary electric service arranged and paid for by the contractor.
3. Dewatering pumps powered by gasoline engines, diesel engines, or generators shall not be used without the written approval of the Department of Public Works Streets and Utilities Manager.

2.03 EXECUTION

A. Examination

1. Conduct additional borings and investigations as required to complete dewatering system design.

B. Preparation

1. Call MISS DIG at 1-800-482-7171 or 811 not less than three full working days before performing any portion of the Work that involves any soil disturbance.
2. Request underground utilities to be located and marked within and surrounding construction areas.
3. Verify all utility companies have responded before commencing Work.
4. Notify Department of Public Works Streets and Utilities Manager prior to commencing dewatering.

5. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.

C. Monitoring Wells
   1. Install monitoring wells as needed to verify water table elevation within the areas necessary to complete the work and at locations indicated on Drawings.
   2. Test each monitoring well point to verify installation is performing properly.
   3. Install piezometers, calibrate, and test for proper operation.
   4. Protect monitoring well standpipes from damage by construction operations.
   5. Maintain accessibility to monitoring wells continuously during construction operations.
   6. Maintain monitoring wells until groundwater is allowed to return to normal level.

D. Dewatering System
   1. Install dewatering system in accordance with Drawings or approved design.
   2. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.
   3. Install components in accordance with manufacturer's instructions.

E. Surface Water Control System
   1. Contractor to obtain approval from Department of Public Works Streets and Utilities Manager before utilizing ditches, berms, and other devices in the right-of-way to divert and drain surface water from excavation area.
   2. Divert surface water and seepage water within excavation areas into sumps and pump water into approved location by Department of Public Works Streets and Utilities Manager.
   3. Control and remove unanticipated water seepage into excavation.

F. System Operation And Maintenance
   1. Operate dewatering system continuously until backfilling is complete.
   2. Provide 24-hour supervision of dewatering system by personnel skilled in operation, maintenance, and replacement of system components.
   3. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.
   4. When dewatering system cannot control water within excavation, Department of Public Works Streets and Utilities Manager and stop excavation work.
   5. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
   6. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
   7. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
   8. Correct unanticipated pressure conditions affecting dewatering system performance.
   9. Do not discontinue dewatering operations without Department of Public Works Streets and Utilities Manager’s approval.

G. Water Disposal

1. Discharge water only into an approved location by Department of Public Works Streets and Utilities Manager.
2. Discharge groundwater into storm sewer system, drainage channels, or settling basins as required. Erosion controls at the discharge may be required in addition to those specified in the plans.
3. Discharge wastewater from excavations involving an existing sanitary sewer into sanitary sewer. Location of discharge to sanitary sewer must be approved by the collection system owner. Provide notification to wastewater treatment plant supervisor.
4. Pumping rates shall not exceed 50% of the capacity of the receiving sewer.
5. Temporarily suspend pumping to sewers if necessary to avoid or relieve backups.

H. System Removal
1. Remove dewatering and surface water control systems after dewatering operations are discontinued.
2. Remove piezometers and monitoring wells.
3. Cut off and cap abandoned wells minimum 36 inches below completed subgrade elevation.
4. All well holes shall be plugged and abandoned per the requirements of the EGLE. Fill abandoned piping with grout.
5. Repair damage caused by dewatering and surface water control systems or resulting from failure of systems to protect property.

PART 3 - TRENCHING AND BACKFILLING

3.01 GENERAL

A. Section Includes
1. Excavating trenches for utilities.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. References
1. American Association of State Highway and Transportation Officials:
   a. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
2. ASTM International:
   a. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   b. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   c. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
3. Michigan Department of Transportation (MDOT)
   a. Manual for the Michigan Test Methods: MTM 107 - Sampling Aggregates
   b. Manual for the Michigan Test Methods: MTM 108 - Percent Loss by Washing
   c. Manual for the Michigan Test Methods: MTM 109 - Sieve Analysis

d. Density Testing and Inspection Manual: One Point T-99 Test
e. Density Testing and Inspection Manual: Michigan One Point Cone Test
f. Density Testing and Inspection Manual: Density In-Place (Nuclear) Test

4. Michigan Occupations Safety and Health Administration (MIOSHA)
   a. Construction Safety Standards Part 9: Excavation, Trenching, and Shoring.

C. Quality Assurance:
1. Perform Work in accordance with MDOT Standard Specifications for Construction, latest edition. Maintain one copy on site.

D. Coordination:
1. Perform Work in accordance with MDOT Standard Specifications for Construction, latest edition.

3.02 PRODUCTS

A. Dense-Graded Crushed Stone
1. Crushed, angular, natural stone material, meeting the requirements of 21AA as defined by the Michigan Department of Transportation Standard Specifications for Construction, Section 902.
2. Crushed concrete and slag are not allowed.

B. Granular Materials
1. Granular material Class II, IIa, III, or IIIa as defined by the Michigan Department of Transportation Standard Specifications for Construction, Section 902.
2. Select Granular Materials shall be in accordance with the requirements for Class II, IIa, III, or IIIA materials as defined by the Michigan Department of Transportation Standard Specifications for Construction, Section 902. Select Granular material shall have a maximum particle size of 1 ½ inches.
3. Suitable on-site material may be utilized as trench backfill with approval of the Department of Public Works Streets and Utilities Manager.

C. Concrete
1. Concrete shall conform to the requirements of grade S3 in accordance with the Michigan Department of Transportation Standard Specifications for Construction, Section 1004.

D. Flowable Fill For Backfilling
1. Materials:
   a. Fly Ash: Fly Ash shall have a maximum loss on ignition of 12% and meet the other requirements of ASTM C618 (Class F).
   b. Water: Water shall meet the requirements of ASTM C94.
   c. Cement: ASTM C150 or C595, Type I or IA.
2. Mixture Strength 100 - 120 psi, (690 - 825 kPa):
   1) Fly Ash: 2000 lbs./cyd (1190 kg/m3) min
   2) Cement: 70 lbs./cyd (40 kg/m3) min
   3) Water: Sufficient water to produce desired flowability, ±700 lbs./cyd (415kg/m3)
3. Temperature of the flowable fill mix as manufactured and delivered shall be at least 50 degrees Fahrenheit (10 degrees Celsius). Flowable fill can be mixed by pugmill, central concrete mixer, ready mix truck, turbine mixer, or other acceptable equipment or method.

E. Accessories

1. Geotextile Fabrics shall conform to Section 910 of the 2020 MDOT Standard Specifications for Construction.

3.03 EXECUTION

A. Lines And Grades

1. Lay pipes to lines and grades indicated on Drawings.
2. The Department of Public Works reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
3. Use laser-beam instrument with qualified operator to establish lines and grades.

B. Preparation

1. The contractor shall call Miss Dig at 1-800-482-7171 or 811 not less than three full working days before performing any portion of the Work that involves any soil disturbance.
2. Request underground utilities to be located and marked within and surrounding construction areas.
3. Verify all utility companies have responded before commencing Work.
4. Identify required lines, levels, contours, and datum.
5. Notify utility company to remove and/or relocate utilities.
6. Protect utilities indicated to remain from damage.
7. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.
8. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
9. Review and follow all construction safety standards set forth in MIOSHA Std. 1306 Part 9 "Excavation, Trenching, and Shoring".

C. Trenching

1. Excavate subsoil required for utilities.
2. Remove lumped subsoil, boulders, and rock. Provide a minimum of 4” clearance between pipe and rock, boulders, and large stones.
3. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with the Work.
4. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
5. Do not interfere with bearing splay of foundations. Generally, a 45-degree slope is suitable for most soil types; however, certain soils may require flatter slopes or shoring.
6. When Project conditions permit, slope side walls of excavation. When side walls cannot be sloped, provide a trench box, sheeting and shoring to protect excavation.
7. When subsurface materials at bottom of trench are loose or soft, notify the Department of Public Works Streets and Utilities Manager, and request instructions for undercutting the trench bottom.
8. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Granular Material or Coarse Aggregate as directed by the Department of Public Works Streets and

Utilities Manager. Compact to density equal to or greater than requirements for subsequent backfill material.

9. Hand trim for bell and spigot pipe joints. Remove loose matter.
10. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by the Department of Public Works Streets and Utilities Manager.
11. Remove excess subsoil not intended for reuse, from site.

D. Sheeting And Shoring
   1. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
   2. Support trenches more than 4 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
   3. Design sheeting and shoring to be removed at completion of excavation work.
   4. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
   5. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

E. Pipe Bedding
   1. General:
      a. Unless otherwise specified, bed pipe in accordance with the specified trench detail in accordance with MDOT Standard Plan R-83 Series. Where special pipe bedding is specified on the plans, bed pipes in accordance with the following Special Pipe Bedding Classifications.
   2. Special Pipe Bedding (where specified)
      a. Rigid Pipe: Bed Rigid Pipe in accordance with ASTM C12, with the following exceptions:
         1) Class A: Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches (100 mm) or 1/4 of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe to the horizontal centerline. The top half of the pipe shall be covered with a monolithic plain concrete arch having a thickness of at least four (4) inches (100 mm) or 1/4 of the inside diameter of the pipe, whichever is greater, at the pipe crown and a minimum width equal to the outside diameter of the pipe plus eight (8) inches (200 mm) or 1-1/4 of the diameter of the pipe, whichever is greater.
         2) Class B: Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four inches (100 mm) or 1/8 of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe to the horizontal centerline. Backfill from pipe horizontal centerline to a level not less than 12 inches (300 mm) above the top of the pipe shall be Class II, IIa, III, or IIIa granular material as specified in the trench detail. This material shall be placed in 6-inch (150 mm) layers with each layer thoroughly compacted by mechanical means with the finished compacted material a minimum of 12 inches (300 mm) above the top of pipe.

3) Class C: Pipe shall be bedded in Class II, IIa, III, or IIIa granular material as specified in the trench detail, placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches (100 mm) or 1/8 of the outside diameter of the pipe, whichever is greater, and the bedding shall extend to a level not less than 12 inches (300 mm) above the top of the pipe. This material shall be placed in 6-inch (150 mm) layers with each layer thoroughly compacted by mechanical means with the finished compacted material a minimum of 12 inches (300 mm) above the top of pipe.

b. Flexible Pipe Bedding: Flexible pipe bedding shall conform to ASTM D2321, except as noted. Continuous and uniform bedding shall be provided in the trench for all buried pipe.

1) Class I: Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches (100 mm) and shall extend up the sides of the pipe until the top of pipe is covered by a minimum thickness of 12 inches (300 mm). Where allowable trench widths are exceeded, Class I bedding shall be used to the full width between undisturbed trench walls. Concrete cradle bedding shall not be used.

2) Class II: Pipe shall be bedded in crushed stone bedding material placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches (100 mm), or 1/8 of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe to the horizontal centerline. Backfill from pipe horizontal centerline to a level not less than 12 inches (300 mm) above the top of the pipe shall be Class II, IIa, III, or IIIa granular material as specified in the trench detail. This material shall be placed in 6-inch (150 mm) layers with each layer thoroughly compacted by mechanical means with the finished compacted material a minimum of 12 inches (300 mm) above the top of pipe. Where allowable trench widths are exceeded, Class I bedding shall be used to the full width between undisturbed trench walls. Concrete cradle bedding shall not be used.

3) Class III: Pipe shall be bedded in Class II, IIa, III, or IIIa granular material as specified in the trench detail, placed on the trench bottom. Bedding shall have a minimum thickness beneath the pipe of four (4) inches (100 mm) or 1/8 of the outside diameter of the pipe, whichever is greater, and the bedding shall extend to a level not less than 12 inches (300 mm) above the top of the pipe. This material shall be placed in 6-inch (150 mm) layers with each layer thoroughly compacted by mechanical means with the finished compacted material a minimum of 12 inches (300 mm) above the top of the pipe. Where allowable trench widths are exceeded, Class I bedding shall be used to the full width between undisturbed trench walls. Concrete cradle bedding shall not be used.

F. Haunching Initial Backfill

1. Place and compact haunching material and initial backfill in 6-inch layers in accordance with the specified trench detail or special bedding detail.
2. Utilize dense-graded crushed stone, select, or special granular materials with a maximum particle size less than 1 ½ inches for haunching and initial backfill within 12 inches of the top of the pipe.
3. Compact granular materials to a minimum of 95% of the maximum dry density.

G. Backfilling

1. Backfill trenches to contours and elevations with unfrozen fill materials.

2. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
3. Place and compact backfill material in continuous 12-inch layers and compact in accordance with MDOT Standard Plans R-83 Series.
4. Compact granular materials to a minimum of 90% of the maximum dry density.
5. Employ placement method that does not disturb or damage foundation perimeter drainage, utilities in trench, and other underground facilities.
6. Maintain optimum moisture content of fill materials to attain required compaction density.
7. Mark end of pipe and fully backfill the trench at the end of each working day or protect open trench in Accordance with MDOT Standard Specifications for Construction.

H. Field Quality Control
1. Perform laboratory testing of material to determine gradation in accordance with ASTM C136 and MTM 108 and MTM 109.
2. Perform testing to determine maximum density in accordance with ASTM D 1557 or Michigan One-Point Cone Method.
3. Provide City with samples or access to stockpiles upon request.
4. Perform in place compaction tests in accordance with the following:
   a. Density Tests: ASTM D2922 and the procedures described in the MDOT Density Testing and Inspection Manual. Where conflicts arise, the ASTM standard shall prevail.
   b. Moisture Tests: ASTM D3017 and the procedures described in the MDOT Density Testing and Inspection Manual. Where conflicts arise, the ASTM standard shall prevail.
5. Frequency of Tests: At each compacted bedding and backfill layer, one (1) test for each 150 feet of trench length per lift will be conducted. Additional testing may be required at the discretion of the Department of Public Works Streets and Utilities Manager.
6. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

I. Protection Of Finished Work
1. Reshape and re-compact fills subjected to vehicular traffic during construction.

PART 4 - UTILITIES REMOVAL

4.01 GENERAL

A. Section Includes
1. Removing abandoned Utilities

B. Definitions
1. HMA: Hot Mix Asphalt
2. Composite Pavement: A pavement which is constructed of more than one paving material, most commonly found as HMA over concrete pavement.
3. Utility Structure: A structure having an inside diameter of at least 24 inches, which provides access to an underground utility. Common examples include catch basins,

manholes, valve chambers, and vaults. Valve boxes, cleanouts, and other utility risers shall not be considered Utility Structures.

C. Quality Assurance
   1. The contractor shall conform to applicable code for environmental requirements, disposal requirements, and safety requirements.

4.02 PRODUCTS

A. Masonry Units
   1. Furnish masonry units for bulkheading pipes in accordance with Section 913 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.

B. Mortar and Grout
   1. Furnish mortar and grout for bulkheading pipes in accordance with Section 1005 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
   2. Constituent materials shall be in accordance with Section 901, 902, 903, and 911 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.

C. Flowable fill Material
   1. Furnish flowable fill material in accordance with 3.02.D above

4.03 EXECUTION

A. Examination
   1. Verify location of right of way and property lines.
   2. Verify all necessary easements and grading permits have been secured.
   3. Identify location of all pavement saw cuts and removals.
   4. Limits of removals for trenching and excavation shall be determined by contractor in accordance with all federal, state, and local regulations. Any pavement removals for trenching and excavation which may be shown on plans are shown as approximate and are for estimating purposes only.
   5. Verify that all needed removals match the plans.
   6. Verify that all removals will be adequate to perform all Work.
   7. Notify Department of Public Works of any needed removals which were not identified on the plans.

B. Preparation
   1. Call MISS DIG at 1-800-482-7171 or 811 not less than three full working days before performing any portion of the Work that involves any soil disturbance.
   2. Request underground utilities to be located and marked within and surrounding construction areas.
   3. Relocate mailboxes to ensure United States Postal Service mail delivery.

C. Protection of Items to Remain
   1. Locate, identify, and protect utilities indicated to remain, from damage.
   2. Protect trees, plant growth, and features designated to remain.

3. Protect benchmarks, survey control points, and existing structures from damage or displacement.

D. Utilities

1. Perform trenching in accordance with 3.03.C above.
2. Remove designated utilities. Indicate removal termination point for underground utilities on Record Documents.
3. Where utilities are designated for removal, the Contractor shall perform the work as follows:
    a. Coordinate with utility owner for removal or relocation of electrical, telephone, and cable television by and all other utilities as shown on the plans.
    b. Sanitary Sewer and Related Structures:
        1) Perform this work in accordance with Section 825 of the Michigan Department of Transportation Standard Specifications for Construction.
        2) Conduct removals to the limits designated on the plans, otherwise from the building structure(s) to the sewer main shall be capped with a watertight plug at the limits of removal.
    c. Storm Sewer and Related Structures:
        1) Perform this work in accordance with Section 402 of the Michigan Department of Transportation Standard Specifications for Construction.
        2) Conduct removals to the limits designated on the plans, otherwise from the building structure(s) to the sewer main shall be capped with a watertight plug at the limits of removal.
    d. Water Distribution:
        1) Perform this work in accordance with Section 823 of the Michigan Department of Transportation Standard Specifications for Construction.
        2) Conduct removals to the limits designated on the plans, otherwise from the building structure(s) to the property line shall be capped with water pressurized plug on the downstream side of the water service corporation valve.
    e. Bulkheading and Abandoning Pipes:
        1) Bulkhead pipes in accordance with Section 402 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
        2) Abandon sewers in place by bulkheading ends and filling completely with flowable fill material at specified in 3.02. D above.
        3) Provide venting at regular intervals as needed to ensure complete filling of pipeline.
4. Backfill trenches and excavations in accordance with 3.03. G above.
5. Remove rock, rubble, and debris from site.

E. Removal Of Asbestos Containing Pipe Materials

1. General
    a. Removal of pipe containing asbestos material shall be performed by a licensed contractor with personnel trained in Class II non-friable asbestos safety
    b. Adhere to NESHAP requirements involving notification when the amount of Removed Asbestos Cement Containing Material (RACM) exceeds the notification threshold defined by the Michigan Department of Labor and Economic Growth.

c. Provide copies of all NESHAP, regulatory documentation, and verification of proper disposal to the Department of Public Works Streets and Utilities Manager.

2. Performing the Work
   a. Keep Asbestos Containing Material wet at all times during the work.
   b. Wear appropriate safety equipment, including respirators for breathing protection.
   c. Cutting of asbestos cement pipe shall be accomplished with circumferential blade cutters or snap cutters wherever possible. Where beveling of pipe ends is necessary, perform this work with a hand-rasp.
   d. Do not blow out with compressed air, dry sweep, or vacuum with non-HEPA rated vacuum cleaner.
3. Disposal
   a. Dispose of RACM as soon as is practical to an appropriate waste disposal site. Transportation of RACM shall be performed in appropriately marked vehicles.
   b. After wetting and removal, seal all RACM in leak-tight containers, wrap and label in accordance with OSHA and US DOT requirements
   c. Ensure proper disposal in sealed containers at an appropriate disposal facility.

F. Demolition
1. The Contractor shall use any means necessary to prevent dust from becoming a nuisance to the public, neighbors, or other work being performed on-site.
2. Notify the respective water authority(s) on scheduling and ordering water for use during construction. Include all costs for water usage and equipment rental fees in the Lump Sum bid amount.
3. Backfill areas of excavated open pits, basements and holes resulting from demolition with clean sand structural fill up to rough grade elevation.
4. Rough grade and compact areas affected by demolition to maintain site grades and contours.
5. All underground items shall be removed and disposed off site and not buried on site.

G. Salvage
1. Materials and equipment that are designated to be salvaged, shall be carefully removed and neatly placed at a site as noted on the drawings.
2. Protection of any trees or other site amenities not identified for removal shall be protected during construction. Replace these and other damaged site amenities at no additional cost to the City of Grand Haven.

H. Disposal of Refuse Materials
1. Remove of all debris, rubbish, equipment, and demolished materials from the site. Refuse materials resulting from the structure demolition shall become the property of the Contractor and shall be removed from the site. Burning of materials from demolition work shall not be permitted on the site.
2. Cleanup of debris shall be done on a daily basis. Continuously clean up and remove demolished materials from site. Do not allow materials to accumulate in buildings or on site.
3. Do not burn or bury materials on site.
4. Leave site in clean condition.

5. Notify the Department of Public Works Streets and Utilities Manager upon the discovery of hazardous materials.

I. Coordination

1. Arrange with utility companies for removing meters and capping gas and water lines. Should any utilities, which are active, be accidentally uncovered, contact the utility company immediately and postpone work at that location if necessary until the utility company has made the proper disconnection. Call Miss Dig before performing any site work.
2. Coordinate with utility companies and coordinate the removal of utility mains.
3. Various environmental clearance contracts may be underway concurrently with the demolition. Coordinate all work so that the properties can be cleared from environmental restrictions prior to demolition.

J. Disposal Site

1. Provide the Department of Public Works Streets and Utilities Manager with documentation and a written agreement for the disposal of the removed items from the site so that it can be received and approved prior to use. Do not disrupt environmental features at the disposal site from debris and equipment. Use proper soil erosion and sedimentation control measures and shall supply an SESC Permit from the designated agency.

K. Field Quality Control

1. Perform laboratory testing of material to determine gradation in accordance with ASTM C117 and ASTM C136.
2. Perform testing to determine maximum density in accordance with ASTM D 1557 or Michigan Cone Method.
3. Provide Department of Public Works with samples or access to stockpiles upon request.
4. Perform in-place compaction tests in accordance with the following:
    a. Density Tests: ASTM D2922 and the procedures described in the MDOT Density Testing and Inspection Manual. Where conflicts arise, the ASTM standard shall prevail.
    b. Moisture Tests: ASTM D3017 and the procedures described in the MDOT Density Testing and Inspection Manual. Where conflicts arise, the ASTM standard shall prevail.
5. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
6. Protecting Pavement Edges
    a. Protect exposed edges of pavement until subsequent paving is completed.
    b. Remove damaged edges in accordance with paragraph 3.4 above, at Contractor’s expense.

PART 5 - MANHOLES AND STRUCTURES

5.01 GENERAL

A. Section Includes:

1. Modular precast concrete manholes and structures with tongue-and-groove joints with precast concrete transition to cover frame, covers, anchorage, and accessories.
2. Bedding and cover materials.

B. References
1. ASTM International:
   a. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
   b. ASTM C55 - Standard Specification for Concrete Brick.
   c. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
   d. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
   e. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
   f. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.
   g. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
   h. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
2. Michigan Department of Transportation
   a. Standard Specifications for Construction, latest edition.
   b. Standard Road Plans
3. Society for Protective Coatings:
   a. SSPC-Paint 16 - Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint.

C. Submittals
1. Shop Drawings: Indicate structure locations, elevations, piping, sizes and elevations of penetrations, and configuration of precast components. Provide drawings for each precast structure.
2. Product Data: Submit product data showing component construction, features, configuration, and dimensions for all manhole and structure components including the following:
   a. Joint gaskets.
   b. Frames and covers.
   c. Resilient connectors.
   d. Adjusting rings.
   e. Access steps.
3. Manufacturer’s Certification: Certify products meet or exceed specified requirements.

D. Quality Assurance
1. Obtain precast concrete utility structures from a single source.
2. Perform work in accordance with National Precast Concrete Association Quality Control Manual for Precast and Prestressed Concrete Plants.
3. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.
4. Installer: Company specializing in performing work of this section.

E. Delivery, Storage And Handling

1. Comply with precast concrete manufacturer's instructions and ASTM C913 for unloading, storing and moving precast manholes and drainage structures.
2. Do not deliver products until concrete has cured 5 days or attained minimum of 75 percent of specified 28 day compressive strength.
3. Store precast concrete manholes and drainage structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.
4. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

5.02 PRODUCTS

A. Manholes and Structures

1. Manhole and Structure Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C443.
2. Manholes and structures shall be in accordance with Section 403 of the Michigan Department of Transportation Standard Specifications for Construction and Standard Plan R-1 Series, latest edition.
3. All structure tops shall be rated for a minimum H-20 vehicular load.

B. Frames and Covers

1. General: ASTM A48/A48M, Class 35B gray cast iron or ASTM A536 ductile iron construction. Machined flat bearing surfaces. Live load rating of 40,000 lbs.
2. Manufacturer
   a. EJ
   b. Substitutions: Not Permitted
3. Products/ Models
   a. Where cover type is expressed in letter form, refer to the MDOT Standard Road Plans. Otherwise, EJ Co. covers are identified by the prefix "EJ" followed by the model number.
4. Water Valve Vaults:
   a. Asphalt Roadway Application: Cover and Frame: Self Leveling EJ #3024 series or equal; frame compatible with specified paving surface otherwise in accordance with Cover Q as specified in Standard Plan R-18 Series.
   b. Concrete, Sidewalk, or Non-roadway Application: Cover and Frame: EJ #1040A series or equal; frame compatible with specified paving surface otherwise in accordance with Cover Q as specified in Standard Plan R-18 Series.
   c. Solid Cover and closed pick slot; 24 inch clear opening, cast with the name of the utility.
   d. Covers shall bear the Grand Haven City Logo and the Legend "COAST GUARD CITY, USA" in addition to the name of the utility. See **APPENDIX B** for product sheet.
5. Painting: Black Asphalt Dip.

C. Components

1. Manhole and structure steps: polypropylene plastic step with 1/2 inch steel reinforcement designed to prevent slippage off step. Required for all structures with 48 inch or larger inside diameter.
2. Foundation Slab: Reinforced, precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C443. Required for all structures.
3. Shaft Construction and Top Section: Reinforced precast concrete pipe sections, lipped male/female joints, sleeved to receive pipe sections.
    a. Perforated walls shall be required for all leaching basins as shown on the plans.
4. Top Section: Eccentric cone wherever possible. Flat top for shallow pipe connections will be permitted with approval of the Grand Haven Department of Public Works Streets and Utilities Manger.
5. Sump: 18-inch diameter by 12 inches measure depth. Floor shall be sloped to drain toward sump.

D. Configuration
1. Shape: Cylindrical.
2. Top Bearing Surface Diameter: Outside diameter no smaller than outside diameter of adjusting rings.
3. Top Bearing Surface Width: Minimum 6 inches continuous width around circumference of adjusting rings.
4. Wall Thickness: Sufficient to provide required top bearing surface and in accordance with ASTM C478.
5. Clear Inside Dimensions: As indicated on Drawings.
6. Design Depth: As indicated on Drawings.
7. Pipe Entry: Furnish openings as indicated on Drawings and as required for all pipe connections.
8. Steps: 10 inches wide, 16 inches on center vertically, cast into structure wall. Distance from cover opening to first step shall not exceed 24 inches.

E. Accessories
1. Structure Joint Gaskets: ASTM C443; rubber. Required for all structure joints.
2. Standard Adjusting Materials:
    a. Precast Fiber reinforced adjusting rings or masonry block set in mortar bed.
    b. Sealant for Adjusting Rings:
        1) Mortar Type R-2 in accordance with Section 1005 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
3. Resilient Adjusting Rings (where specified):
    a. Products:
        1) EJ: Infra-Riser®.
    b. Recycled rubber composite, round rings of 1/2-inch to 3-inch thickness or tapered thickness.
    c. Sealant for Adjusting Rings: ASTM C990
        1) Products:
            a) Butyl Rubber Sealant by ConSeal Concrete Sealants, Inc.
            b) Pro-Stick or EZ-Stick Premium by Press-Seal Gasket Corporation

4. Exterior Manhole Coating: ASTM D 1227, Type III, Class 1, cold-applied, emulsified-asphalt dampproofing applied at a rate of 3 gallons per 100 square feet. Applied to all exterior surfaces of manhole. Required on all manholes used for sanitary sewer service.
5. Concrete: Grade S3 in accordance with Table 701-1 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
6. Hydraulic-Cement Grout: ASTM C1107, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days. Required for all connections to concrete pipe.
7. Resilient Pipe Connectors: ASTM C923, resilient EPDM or polyisoprene rubber; internal stainless steel expanding band; external stainless steel pipe clamp. Required for all connections to plastic pipe.
8. External Sealing Bands(where specified):
    a. ASTM C877, waterproof and flexible, Type I, II, or III.
    b. Width of wrap shall be sufficient to provide 6" of overlap on each side of joint.
    c. Products:
        1) Cretex Specialty Products: Cretex Wrap.
        2) Pipeline Seal & Insulator, Inc.: Riser-Wrap™.
        3) Press-Seal Gasket Corporation: EZ-Wrap.

F. Aggregate Materials
1. Bedding Material
    a. Above water table or dry conditions during placement: Dense Graded Aggregate 21AA in accordance with Table 902-1 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
    b. Below Water Table or Wet Conditions during placement: Course aggregate 6A in accordance with Table 902-1 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
    c. Suitable on-site material may be utilized as bedding with approval of the Department of Public Works Streets and Utilities Manager.
2. Drainage Aggregate (Leaching Basins and Valve Vault Drainage): Aggregate 6A or Open Graded Aggregate 34 R in accordance with Table 902-1 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.
3. Backfill Material: Granular Material Class III in accordance with Table 902-3 of the Michigan Department of Transportation Standard Specifications for Construction, latest edition.

5.03 EXECUTION

A. Examination
1. Verify items provided by other sections of Work are properly sized and located.
2. Verify built-in items are in proper location, and ready for roughing into Work.
3. Verify correct size of manhole and structure excavation.

B. Preparation
1. Coordinate placement of inlet and outlet pipes required by other sections.

2. Do not install manholes and structures where site conditions induce loads exceeding structural capacity of manholes or structures.
3. Inspect precast concrete manholes and structures immediately prior to placement in excavation to verify manholes and structures are internally clean and free from damage. Remove and replace damaged units.

C. Precast Concrete Manhole and Structure Installation
1. Install underground precast structures in accordance with ASTM C891.
2. Excavation:
   a. Excavate for manholes and structures in accordance with 3.03.C in the location and to the depth shown. Hand trim excavation for accurate placement of manholes and structures to elevations indicated on Drawings. Provide clearance around sidewalls of manhole or structure for construction operations and granular backfill.
   b. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes or structures in dry trench.
   c. Where possibility exists of watertight manhole or structure becoming buoyant in flooded excavation, anchor manhole or structure to avoid flotation.
3. Lift precast manholes and structures at lifting points designated by manufacturer.
4. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and manhole or structure remains clean.
5. Set precast manholes and structures bearing firmly and fully on crushed aggregate bedding, compacted to 95% of maximum density per ASTM D1557.
6. Assemble multi-section manholes and structures by lowering each section into excavation. Install rubber gasket joints between precast sections in accordance with manufacturer's recommendations. Lower, set level, and firmly position base section before placing additional sections.
7. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section. Place manhole sections level and plumb.
8. Install external sealing bands at all joints of manholes used for sanitary sewer service.
9. Verify manholes and structures installed satisfy required alignment and grade.
10. Connect plastic pipe to manhole or structure with resilient connectors.
11. Connect concrete pipe to manhole or structure by filling annular space with hydraulic cement grout.
12. Cut pipe to finish flush with interior of manhole or structure.
13. Grout base of shaft section of manhole or structure used for sanitary sewer service. Form continuous flow channel of same width as connected piping with height of vertical sides to 3/4 of pipe diameter. Form curved channels with smooth, uniform radius and slope. Slope concrete benches to drain to channel.
   a. Invert slope: 2.5 percent minimum through manhole.
   b. Bench slope: 4 percent minimum.
14. Backfill excavation in accordance with 3.03.G above.

D. Castings Installation
1. Place all asphalt courses except for top course prior to installing castings located in asphalt paving areas. Cut through lower asphalt courses and remove material as necessary to place adjusting rings and casting.

2. Set adjusting rings of required thickness to achieve specified elevation. Select a combination of tapered rings to achieve required slope for non-level installations.
3. Apply sealant to top and bottom surface of all adjusting rings in a continuous ¼ inch bead forming a closed loop with no gaps.
4. Install casting to the required elevation and slope, in full contact with top adjusting ring. Do not use shims or wedges. Do no use mortar.
5. Apply one additional bead of sealant to joint between casting and top adjusting ring after casting is set.
6. Fill remaining excavated space with concrete paving flush with surrounding paving

E. Monument Box Installation
1. Place all asphalt courses except for top course prior to installing castings located in asphalt paving areas.
2. Obtain location mark on pavement from surveyor responsible for section corner installation.
3. Cut through lower asphalt courses and remove material as necessary to place monument box frame and cover.
4. Adjust location of monument box based on witness dimensions obtained from surveyor.
5. Tolerance: center of monument box shall be within 1/2 inch of center of section corner stake, according to witness dimensions.
6. Adjust height of monument box to match road surface prior to top course asphalt paving.
7. Fill excavated space remaining with replacement asphalt or concrete paving.

F. Vertical Adjustment of Existing Manholes And Structures
1. Where required, adjust top elevation of existing manholes and structures to finished grades shown on Drawings.
2. Carefully remove existing grates, covers, and frames; clean of remaining mortar fragments.
3. Verify distance from final grade to top step and suitability of existing structure for adjustment.
4. Reconstruct or replace structure top section if unsuitable for reuse and adjustment.
5. Install frame and cover in accordance with requirements for castings installation.
6. Where existing castings are suitable for reuse, reinstall removed castings. Suitability will be determined by the City of Grand Haven.
7. When new castings are installed and removed castings are suitable for reuse, salvaged castings shall remain property of City of Grand Haven.

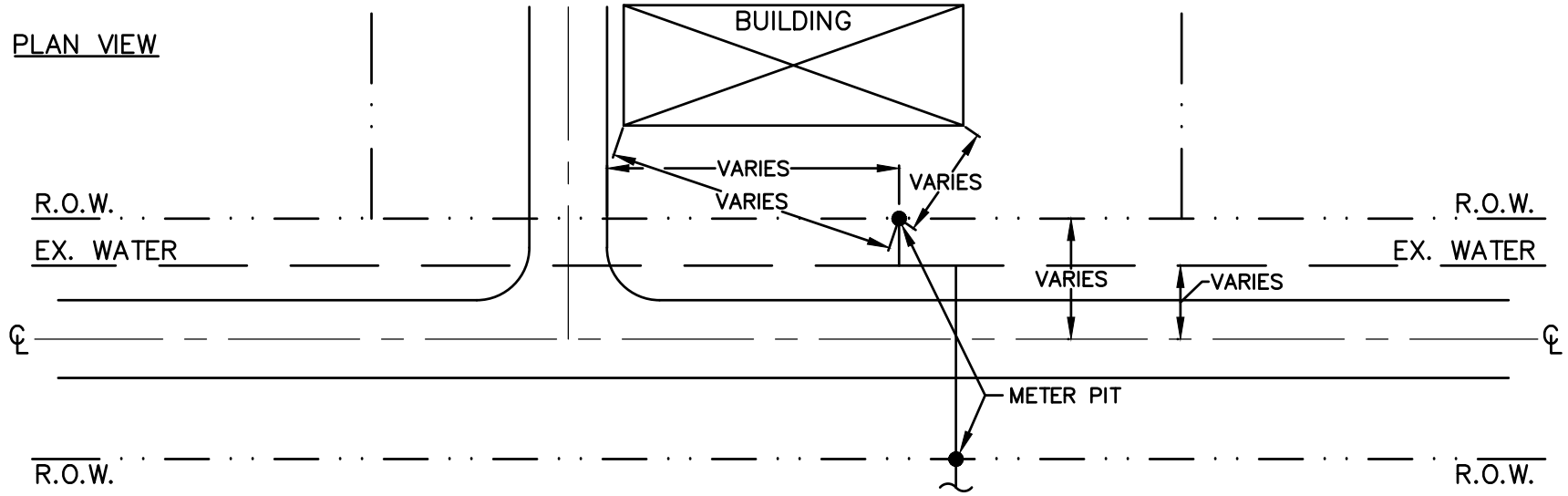
Appendix C
Water Service Installation Detail Sheets

CONTACT DPW @ 616-847-3493

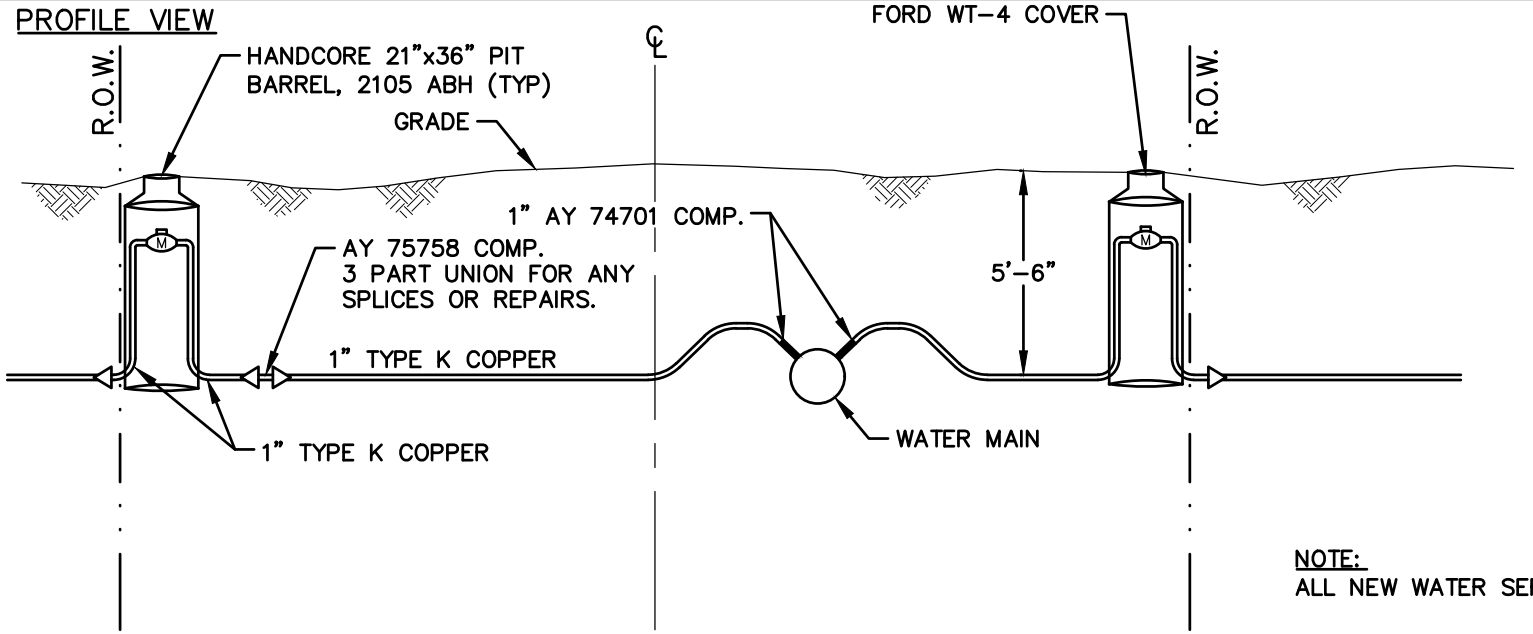
CITY OF GRAND HAVEN – UTILITY DIVISION

TYPICAL WATER SERVICE MEASUREMENTS

PLAN VIEW



PROFILE VIEW



NOTE:
ALL NEW WATER SERVICES 1" MIN.

REVISED: 1-01-19

CITY OF GRAND HAVEN, MICHIGAN

Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

TYPICAL SERVICE WITH METER PIT
5/8", 3/4", AND 1" SERVICE DETAIL

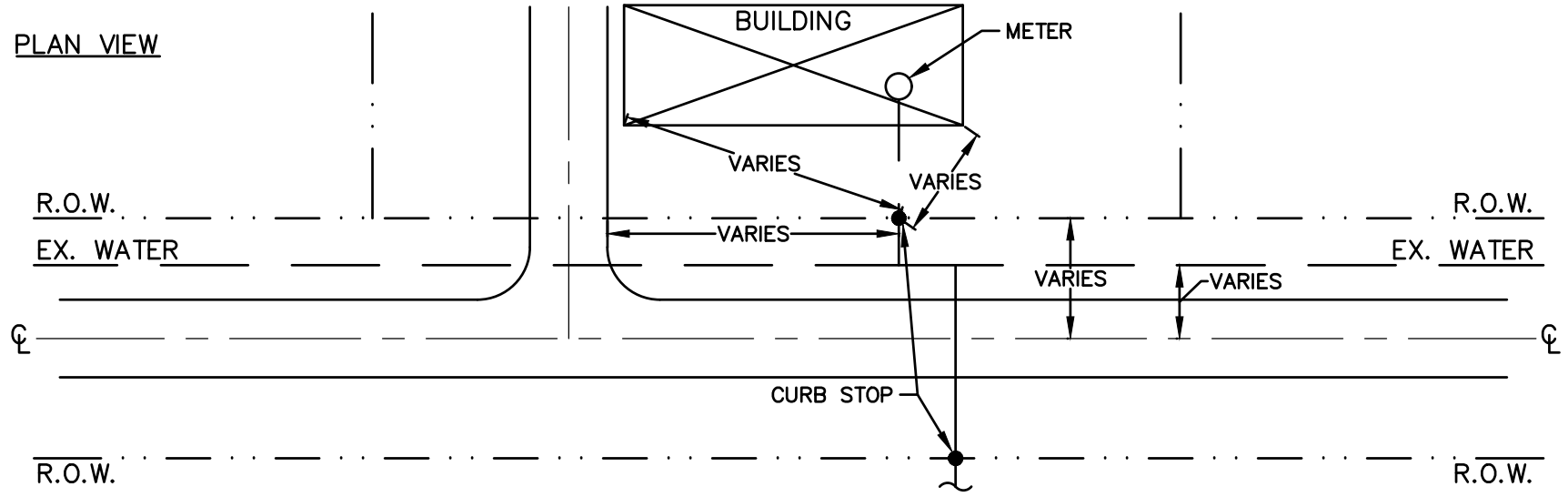
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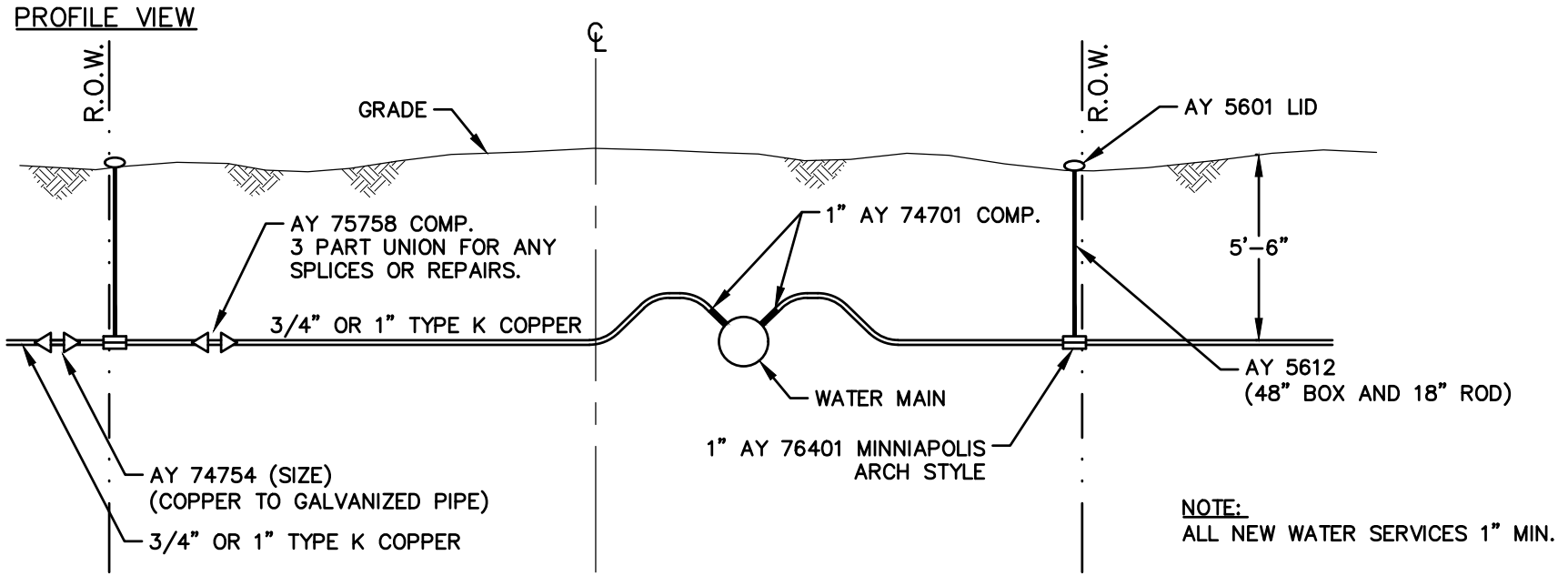
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CONTACT DPW @ 616-847-3493

CITY OF GRAND HAVEN - UTILITY DIVISION

TYPICAL WATER SERVICE MEASUREMENTS





NOTE:
ALL NEW WATER SERVICES 1" MIN.

REVISED: 1-01-19

CITY OF GRAND HAVEN, MICHIGAN

Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

TYPICAL SERVICE - NO METER PIT
5/8", 3/4", AND 1" SERVICE DETAIL

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APPROVED BY	SHEET	DWG FILE
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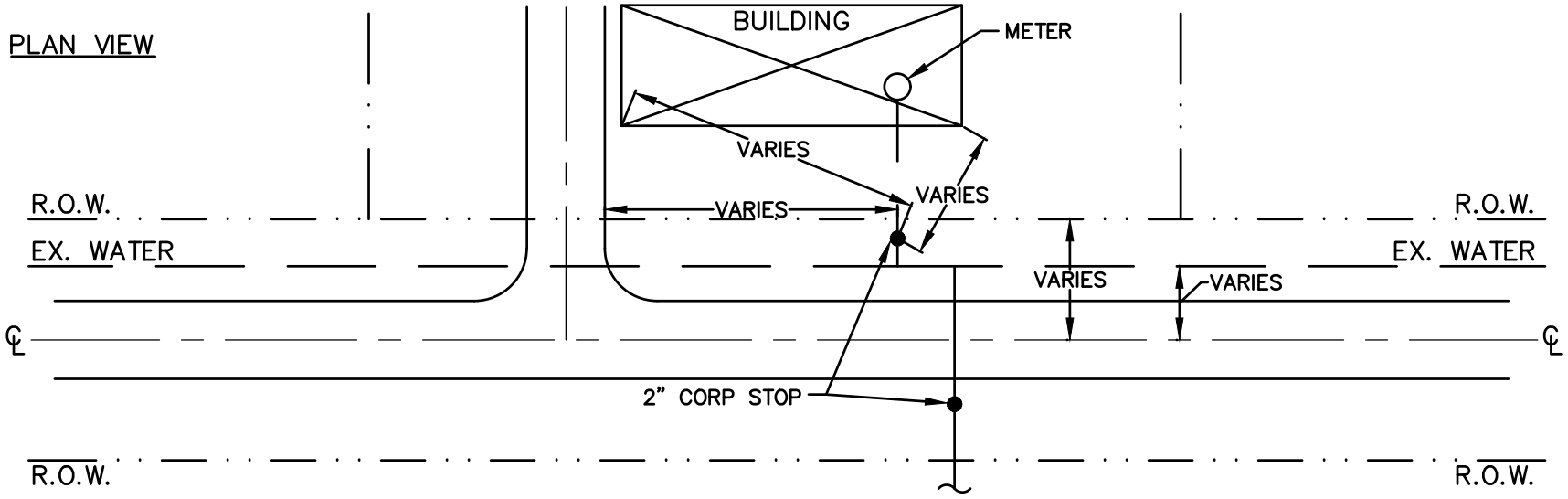
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CONTACT DPW @ 616-847-3493

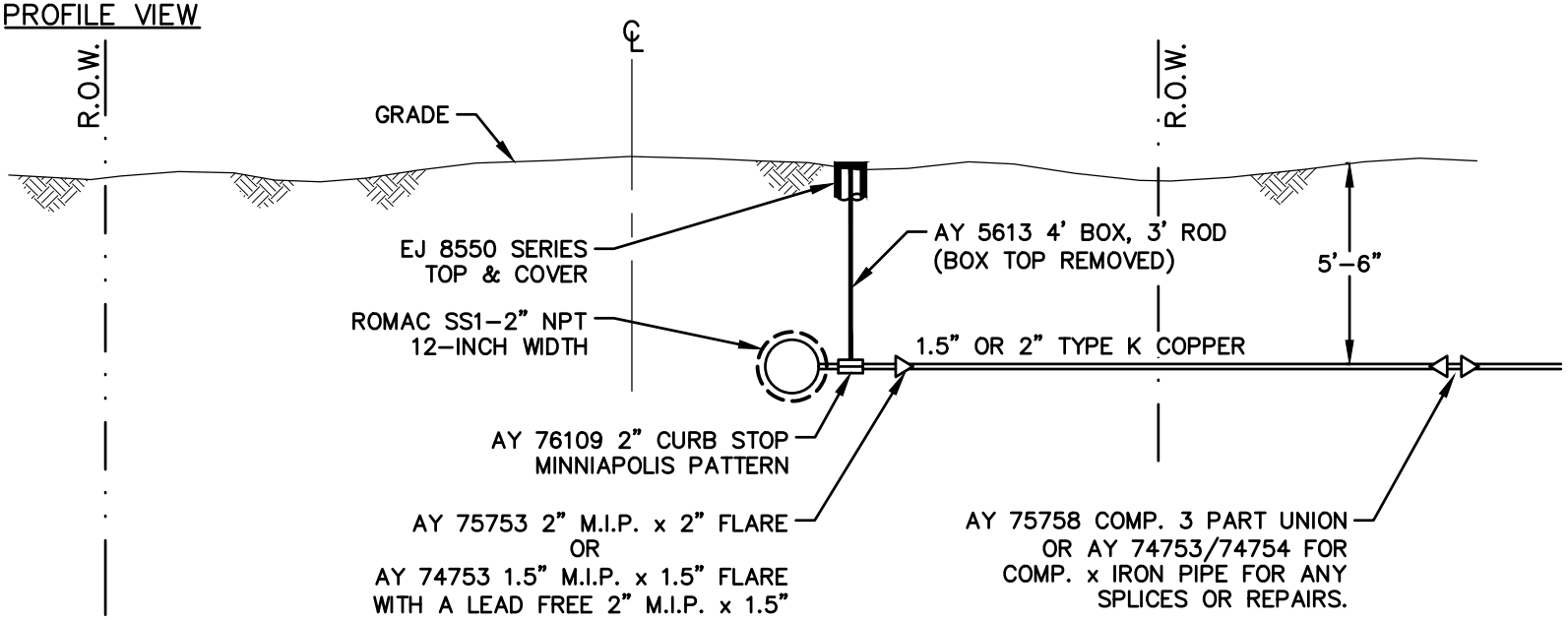
CITY OF GRAND HAVEN - UTILITY DIVISION

TYPICAL WATER SERVICE MEASUREMENTS

PLAN VIEW



PROFILE VIEW



REVISED: 1-01-19

CITY OF GRAND HAVEN, MICHIGAN

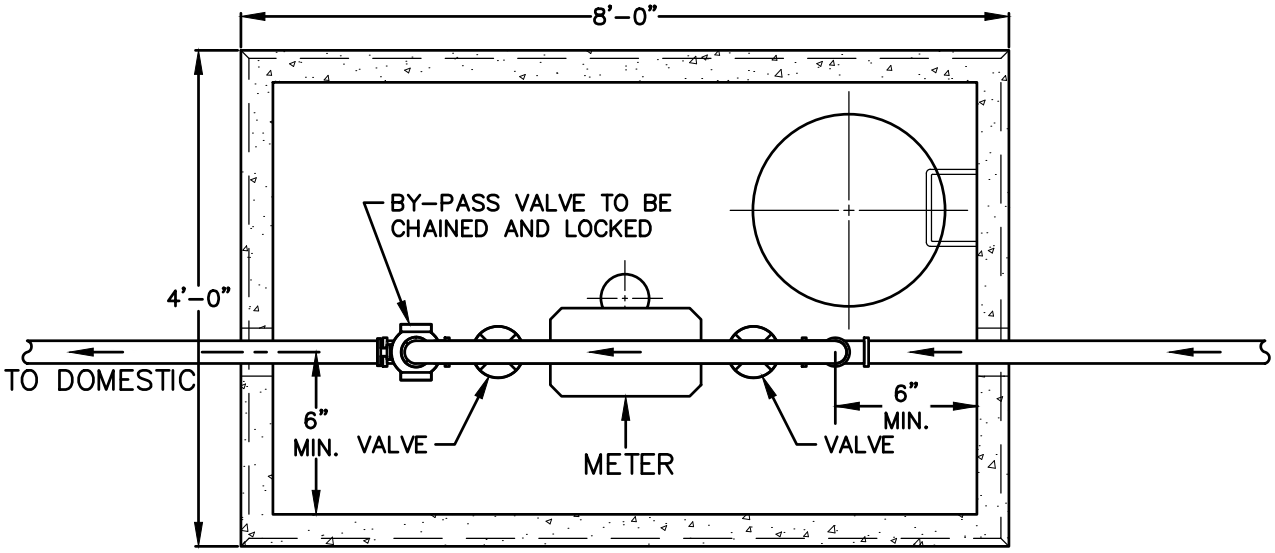
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

TYPICAL 1.5" OR 2" WATER SERVICE DETAILS - NO METER PIT

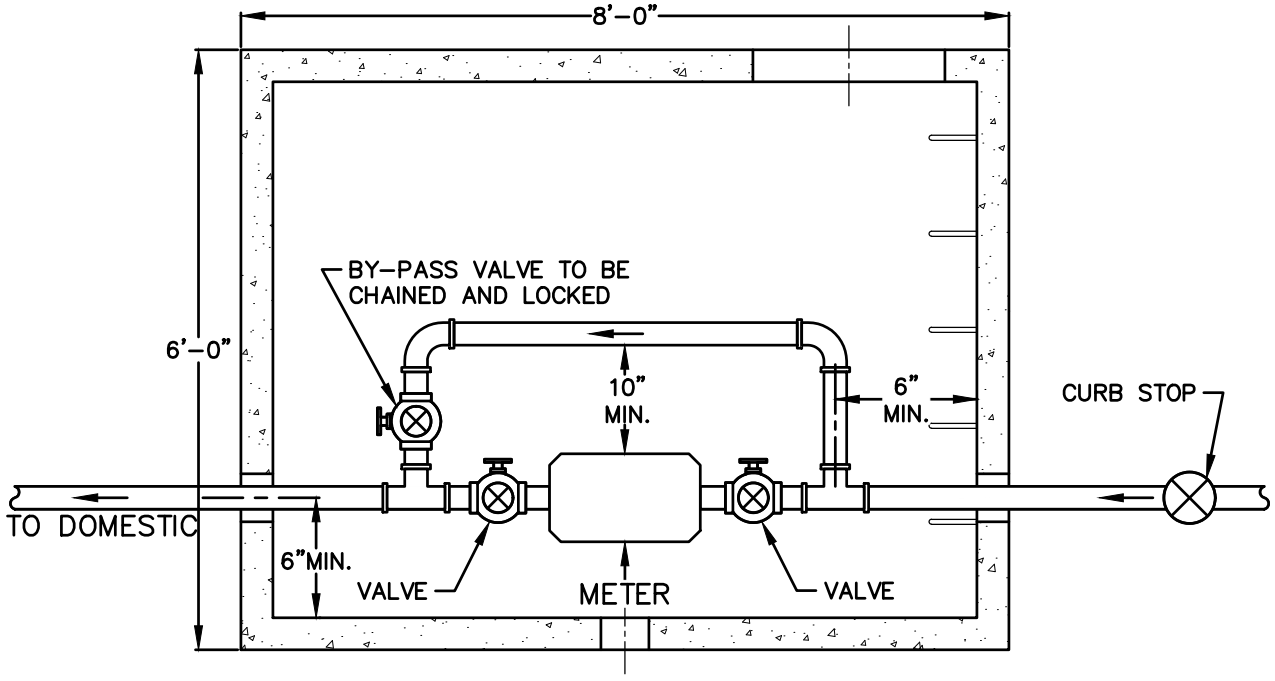
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PLAN VIEW



PROFILE VIEW



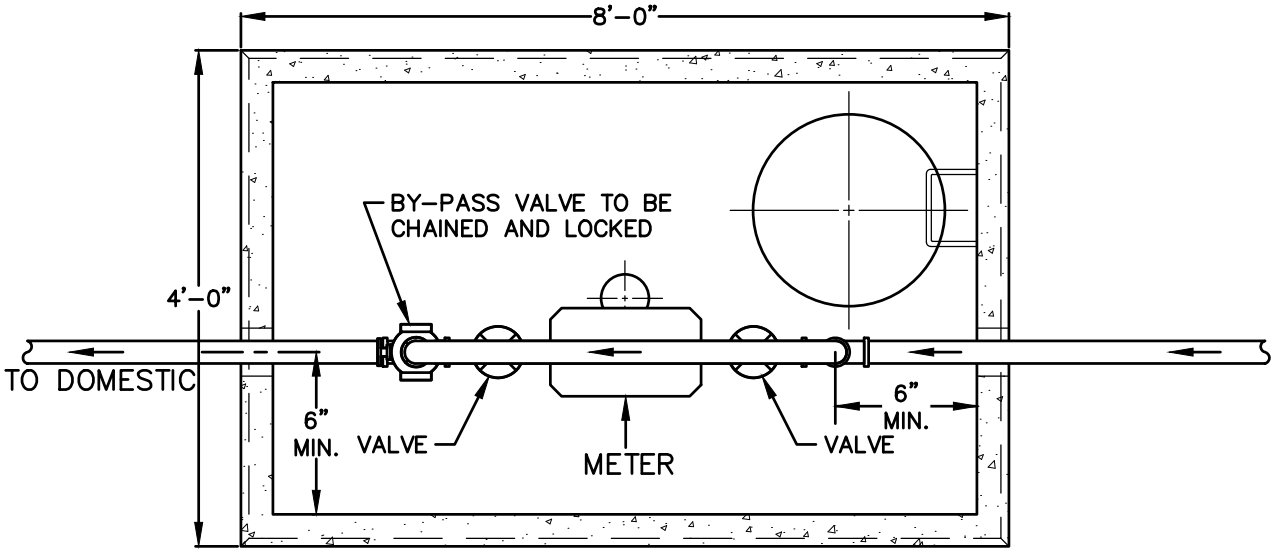
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

METER PIT DETAIL - 1.5", 2", 4" & 6" METERS WITHOUT IRRIGATION

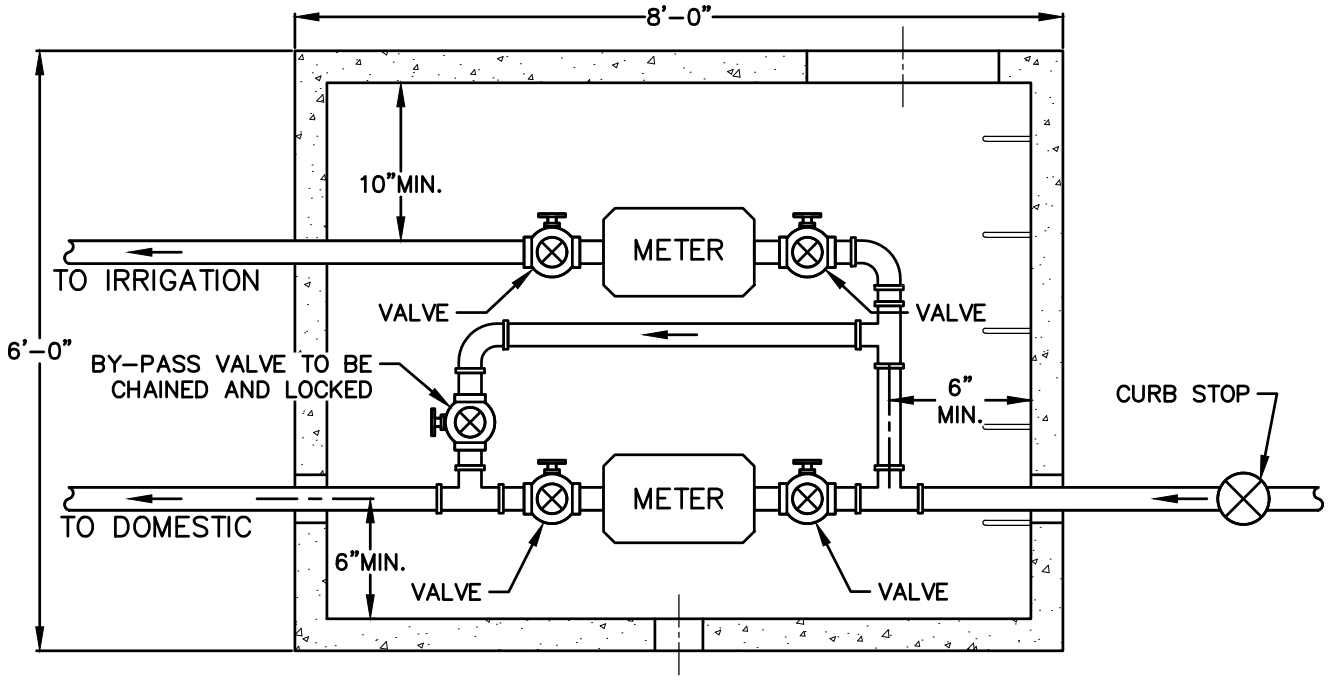
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PLAN VIEW



PROFILE VIEW



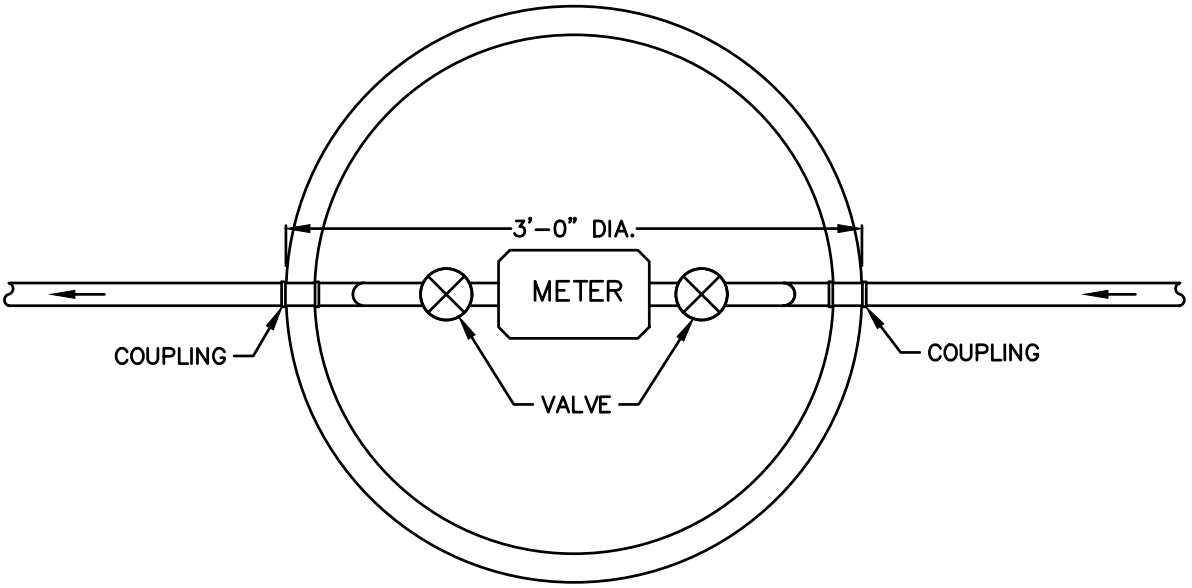
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

METER PIT DETAIL - 1.5", 2", 4" & 6" METERS WITH IRRIGATION

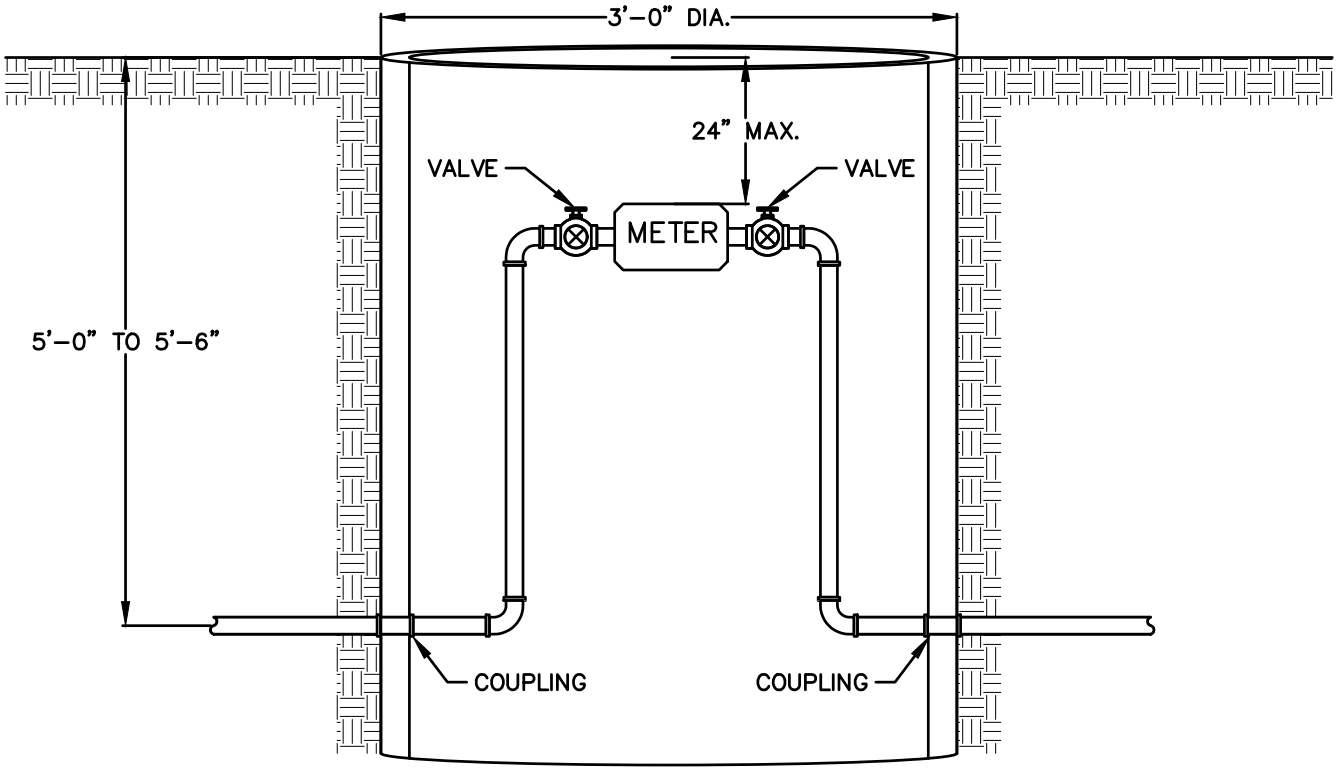
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PLAN VIEW



PROFILE VIEW



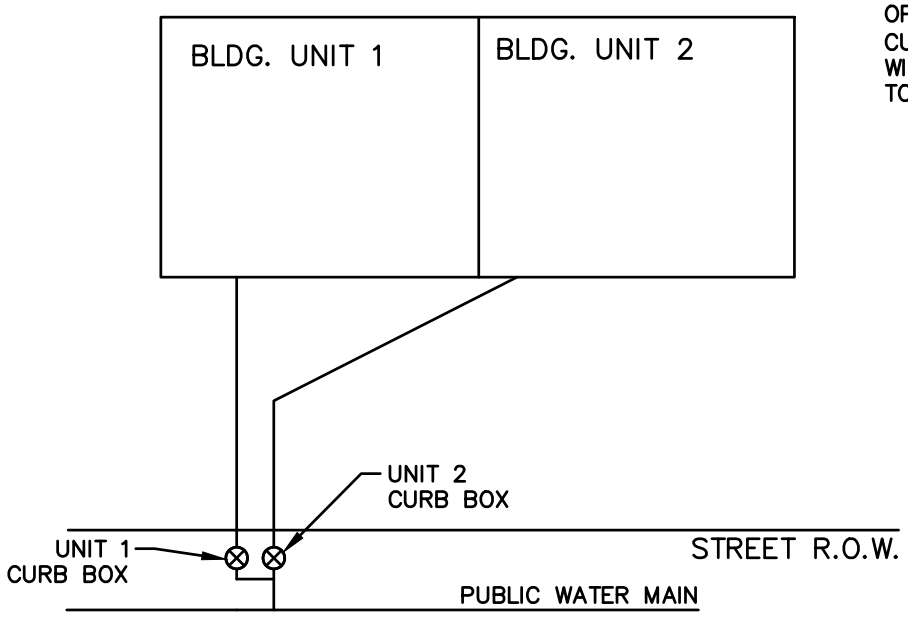
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

METER PIT DETAIL - 5/8", 3/4" & 1" METERS

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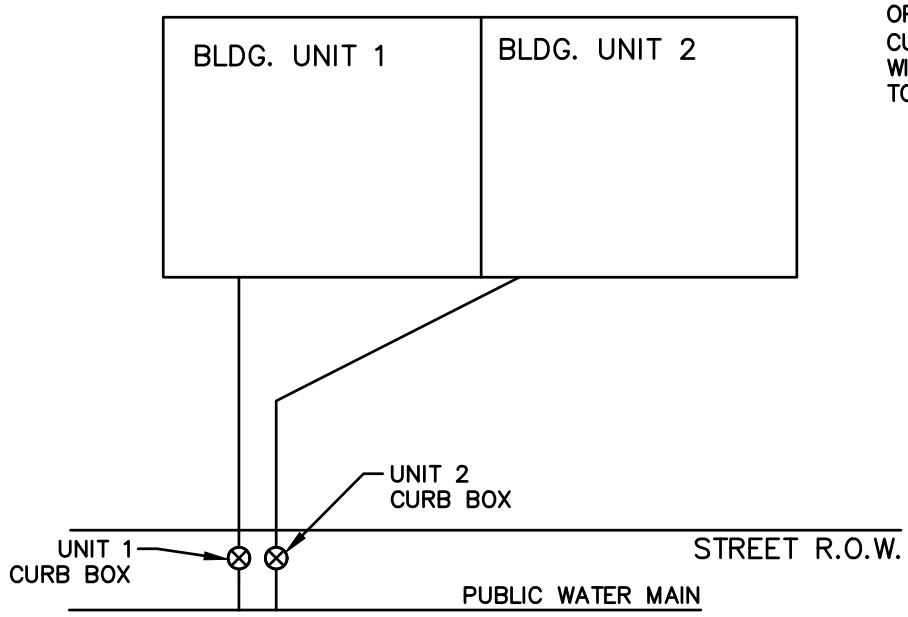
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NOTE:
PROVIDE A METER FOR EACH SEPARATELY BILLED CUSTOMER AND VALVING THAT ENABLES THE DPW TO OPERATE AND MAINTAIN EACH WATER CUSTOMER'S SERVICE INDEPENDENTLY, WITHOUT DISRUPTING WATER SERVICE TO OTHER CUSTOMERS.



CASE I: EXISTING BUILD DUPLEX CONVERSION AND NEW DUPLEX BUILDING

NOTE:
PROVIDE A METER FOR EACH SEPARATELY BILLED CUSTOMER AND VALVING THAT ENABLES THE DPW TO OPERATE AND MAINTAIN EACH WATER CUSTOMER'S SERVICE INDEPENDENTLY, WITHOUT DISRUPTING WATER SERVICE TO OTHER CUSTOMERS.



CASE II: NEW DUPLEX BUILDING

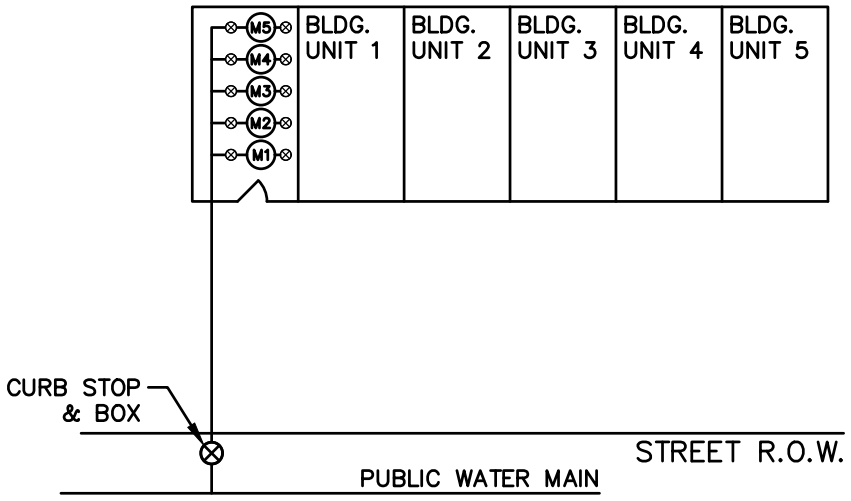
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

MULTI UNIT RESIDENTIAL WATER SERVICE STANDARD DETAIL

DRAWN BY	SCALE	DATE
DJL; CJL	NONE	05/2023
APPROVED BY	SHEET	DWG FILE
SPJ	1 of 2	23-0180 DETAILS

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NOTE:
PROVIDE A METER FOR EACH SEPARATELY BILLED CUSTOMER AND VALVING THAT ENABLES THE DPW TO OPERATE AND MAINTAIN EACH WATER CUSTOMER'S SERVICE INDEPENDENTLY, WITHOUT DISRUPTING WATER SERVICE TO OTHER CUSTOMERS. THE DPW REQUIRES 24HR/DAY "UNLIMITED FREE ACCESS" TO METER UTILITY ROOMS.



CASE III: MULTIPLE UNIT BUILDING

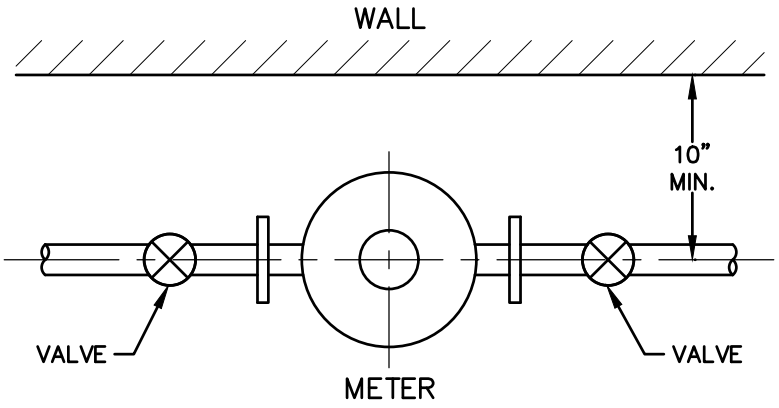
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

MULTI UNIT RESIDENTIAL WATER SERVICE STANDARD DETAIL

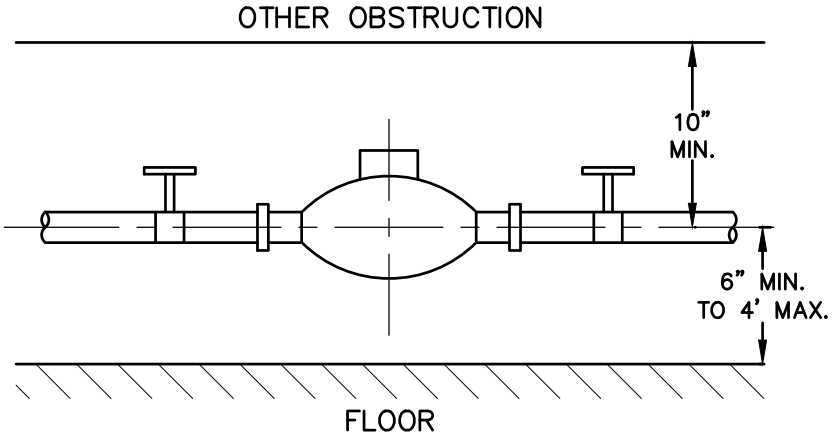
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PLAN VIEW



PROFILE VIEW



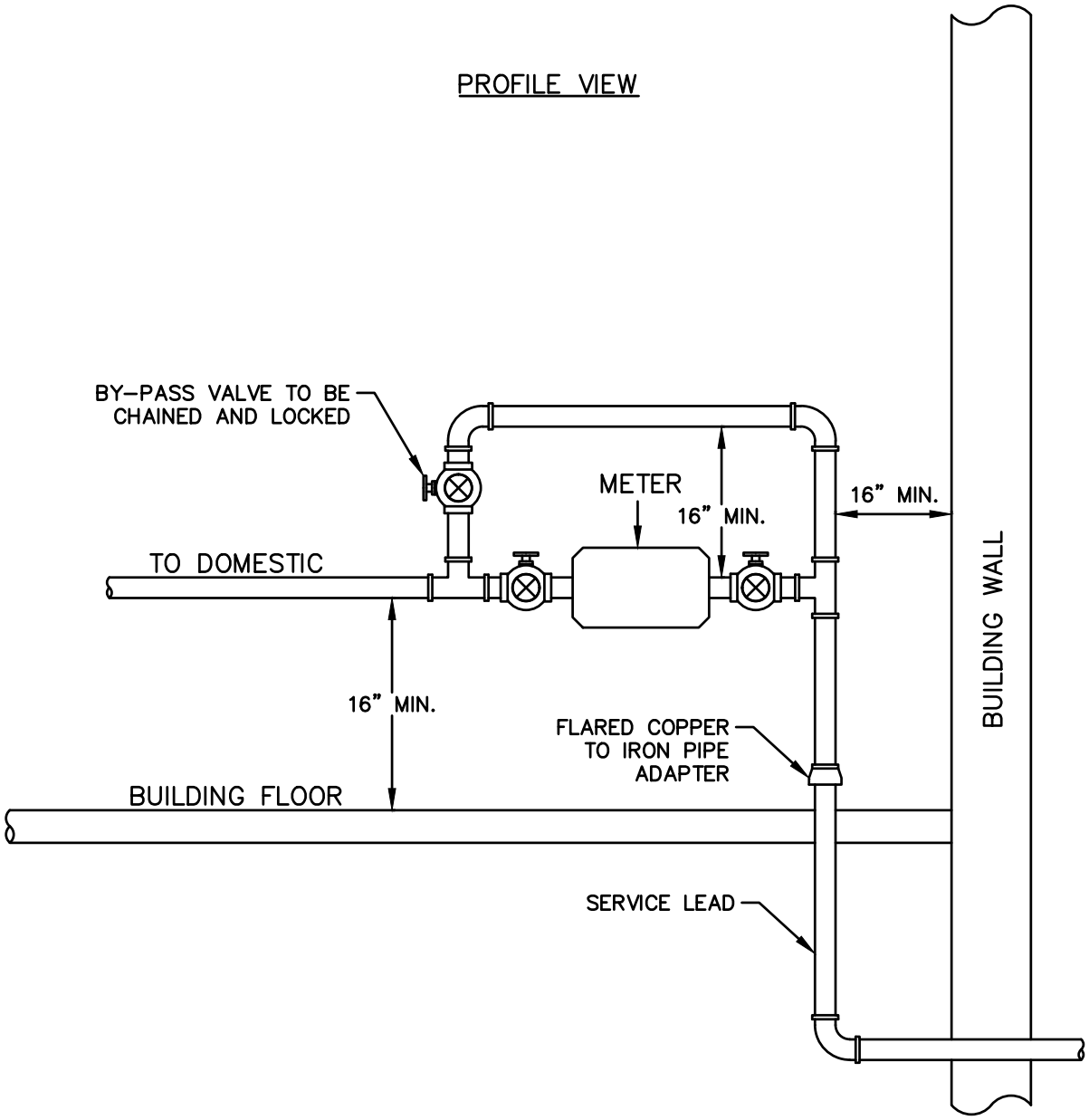
CITY OF GRAND HAVEN, MICHIGAN
Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

METER INSTALLATION STANDARD DETAIL

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APPROVED BY	SHEET	DWG FILE
SPJ	1 of 1	23-0180 DETAILS

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PROFILE VIEW



NOTES:

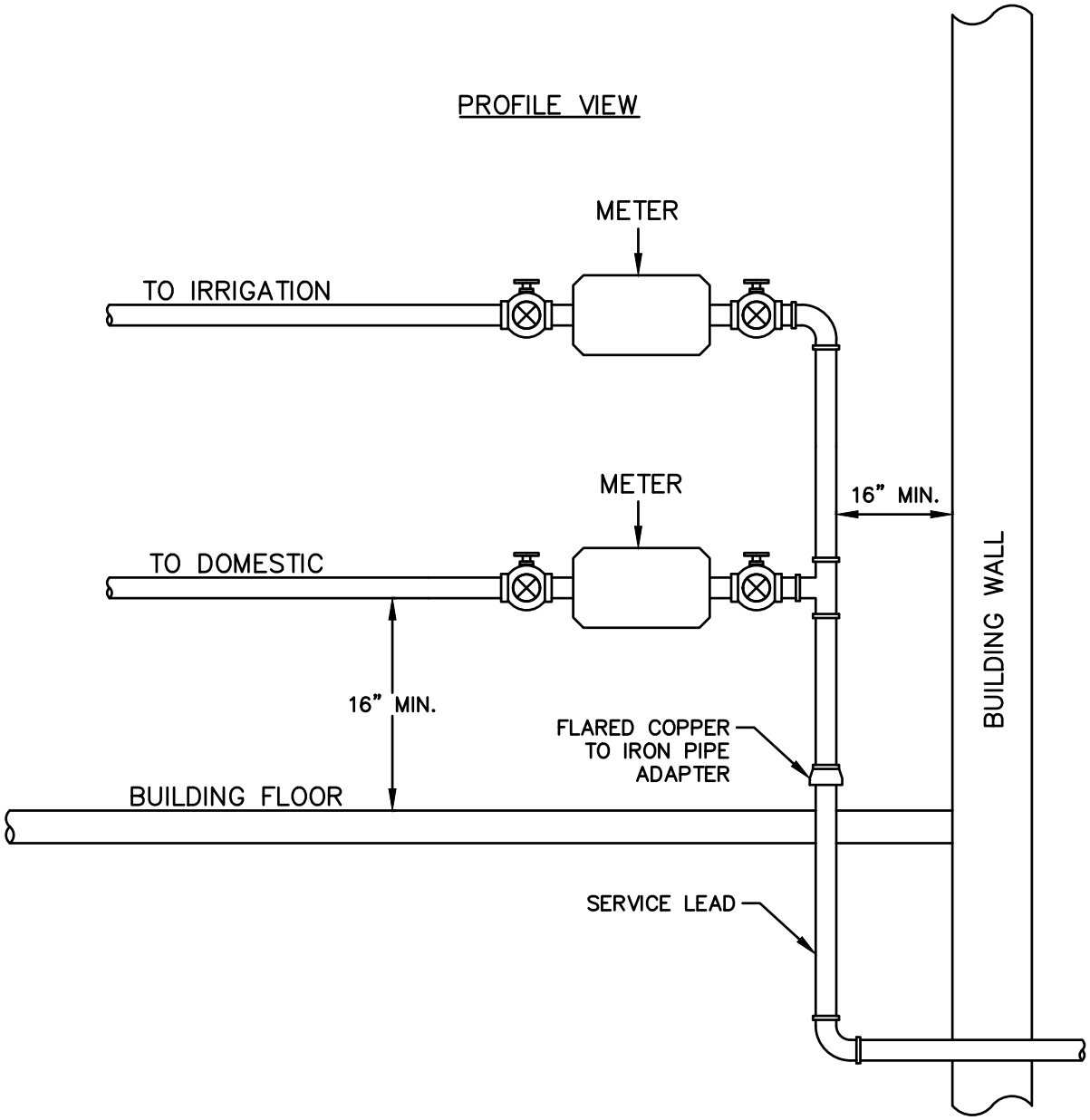
1) ALL JOINTS MUST BE FLARE OR IRON PIPE PRIOR TO METER.
2) BYPASS MUST BE SAME SIZE AS THE METER.
3) BYPASS VALVE MUST BE A GATE VALVE W/ STANDARD WHEEL HANDLE.
4) BYPASS VALVE WILL BE LOCKED AND ACCESSED BY THE CITY ONLY.
5) THE METER MUST BE A MINIMUM 16–INCHES AWAY FROM THE WALL.
6) A 3–FOOT CLEAR SPACE MUST BE MAINTAINED AROUND THE METER.

CITY OF GRAND HAVEN, MICHIGAN
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TYPICAL 1.5" OR LARGER DOMESTIC WATER METER DETAIL

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APPROVED BY	SHEET	DWG FILE
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NOTES:

1) ALL JOINTS MUST BE FLARE OR IRON PIPE PRIOR TO METER.
2) BYPASS MUST BE SAME SIZE AS THE METER.
3) BYPASS VALVE MUST BE A GATE VALVE W/ STANDARD WHEEL HANDLE.
4) BYPASS VALVE WILL BE LOCKED AND ACCESSED BY THE CITY ONLY.
5) THE METER MUST BE A MINIMUM 16–INCHES AWAY FROM THE WALL.
6) A 3–FOOT CLEAR SPACE MUST BE MAINTAINED AROUND THE METER.

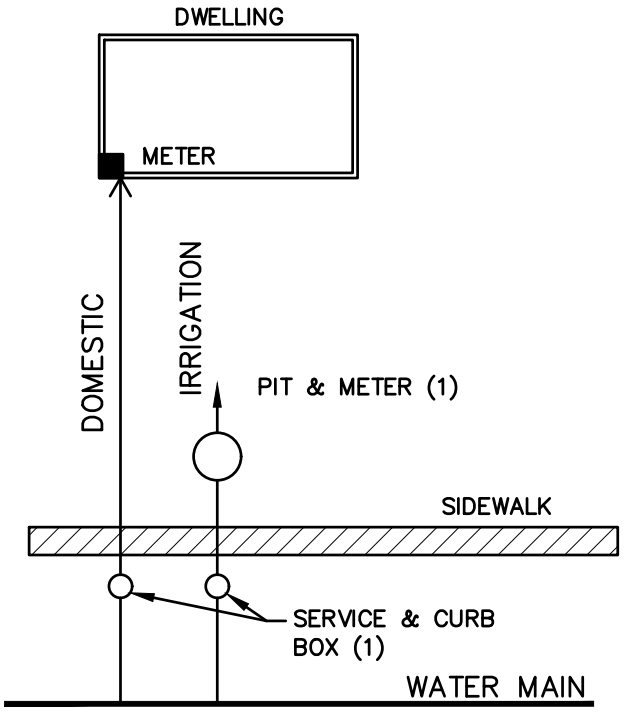
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Department of Public Works
1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

TYPICAL 5/8", 3/4", OR 1" DOMESTIC WATER METER DETAIL WITH IRRIGATION

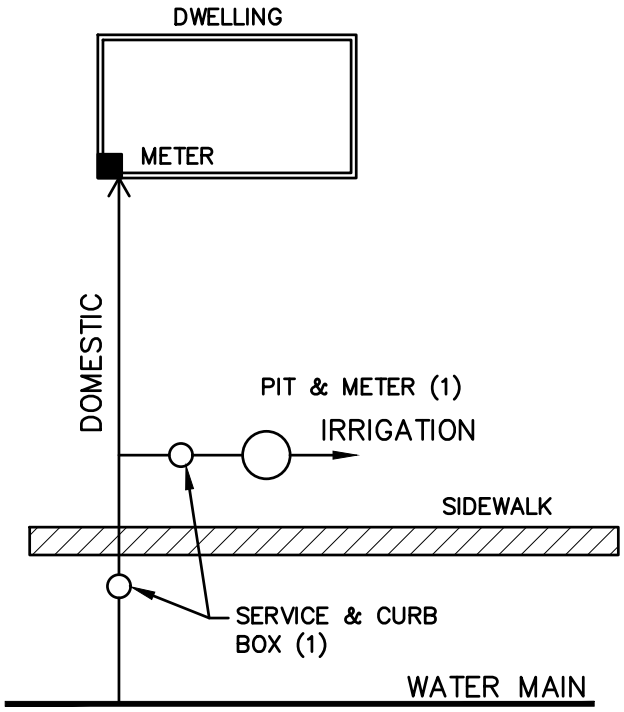
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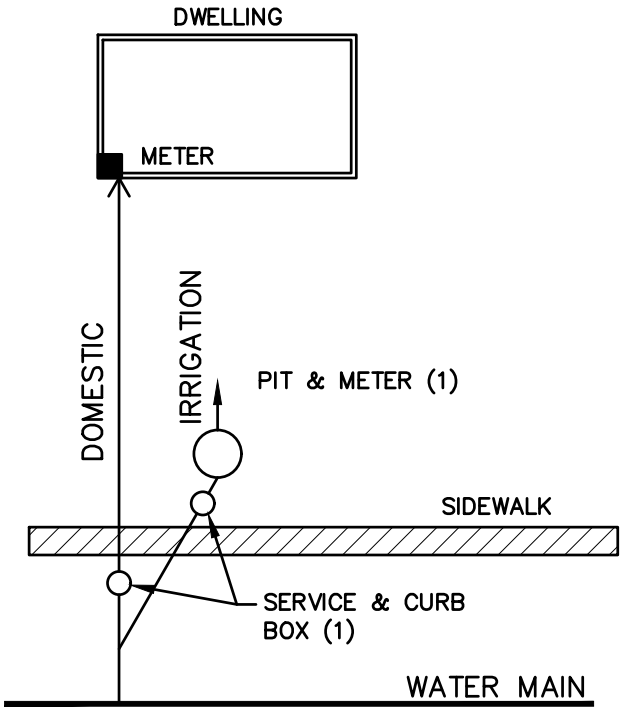
PERMITTED CONFIGURATION 1



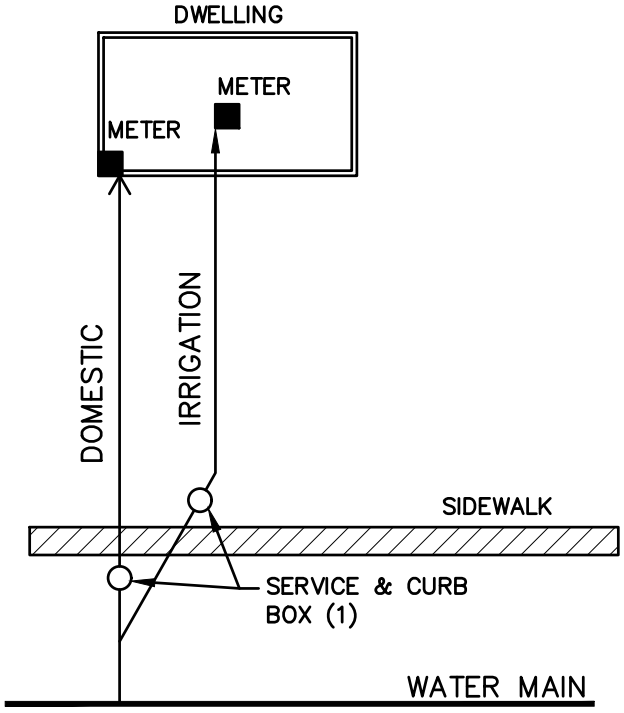
PERMITTED CONFIGURATION 2



PERMITTED CONFIGURATION 3



PERMITTED CONFIGURATION 4



NOTES:

1 = WATER DEPARTMENT INSTALLATION SEWER CHARGE IS BASED ON WINTER QUARTER READ

2 = CURB BOX IS USUALLY INSTALLED 1' OUTSIDE THE WALK

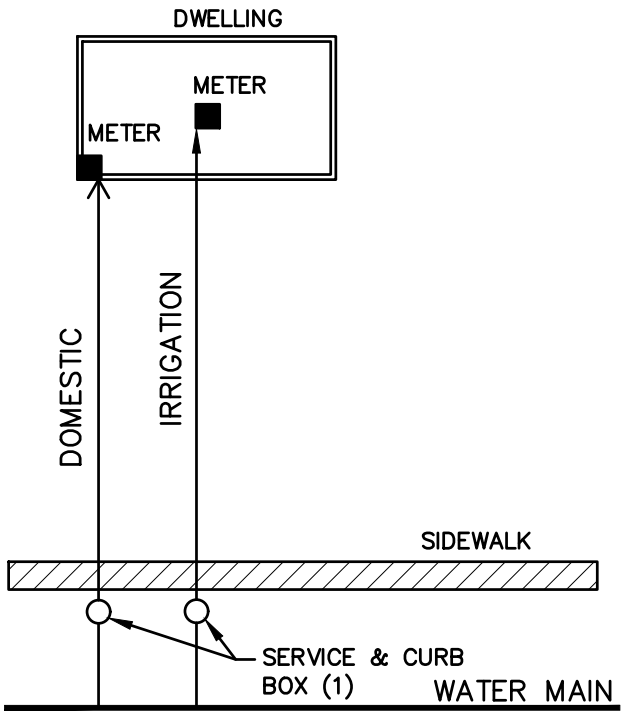
CITY OF GRAND HAVEN, MICHIGAN
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1120 Jackson, Grand Haven, MI 49417
Phone: (616) 847-3493 - Fax: (616) 847-3470
Director: Derek Gajdos

SERVICE INSTALLATION DOMESTIC AND IRRIGATION DETAIL - 1

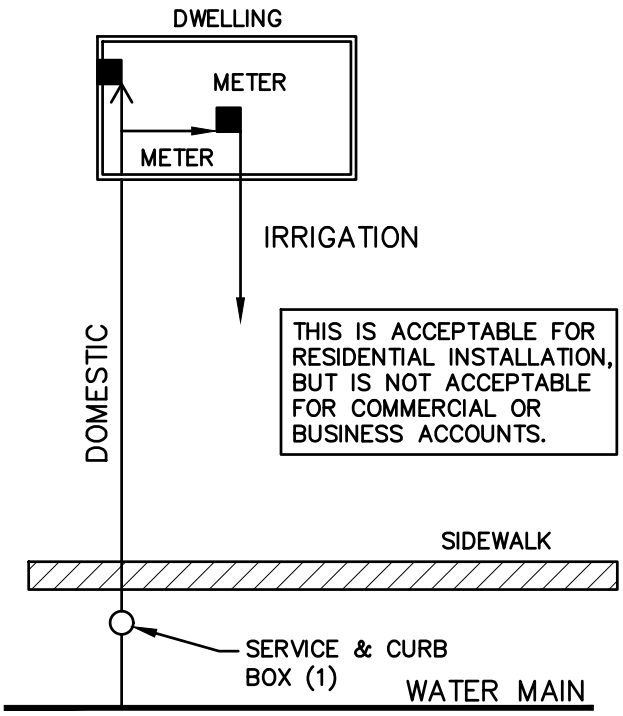
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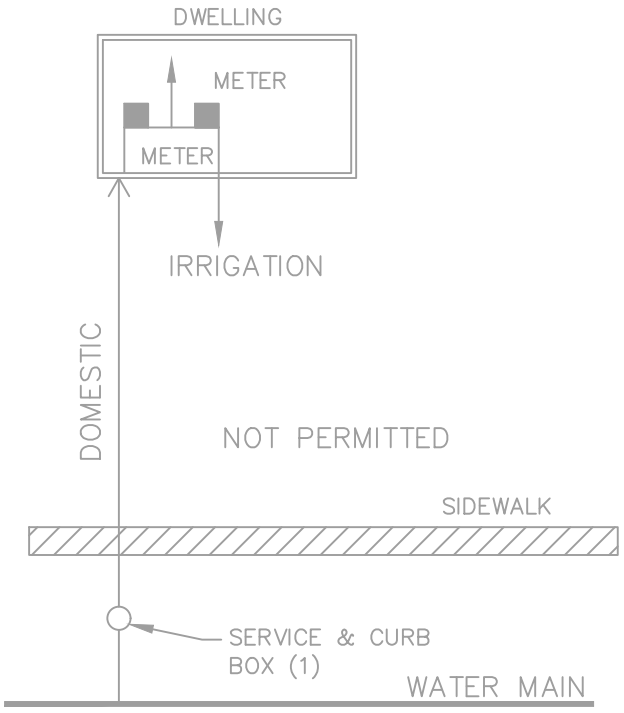
PERMITTED CONFIGURATION 5



PERMITTED CONFIGURATION 6



NOT PERMITTED CONFIGURATION



NOTES:

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2 = CURB BOX IS USUALLY INSTALLED 1' OUTSIDE THE WALK

CITY OF GRAND HAVEN, MICHIGAN
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Director: Derek Gajdos

SERVICE INSTALLATION DOMESTIC AND IRRIGATION DETAIL - 2

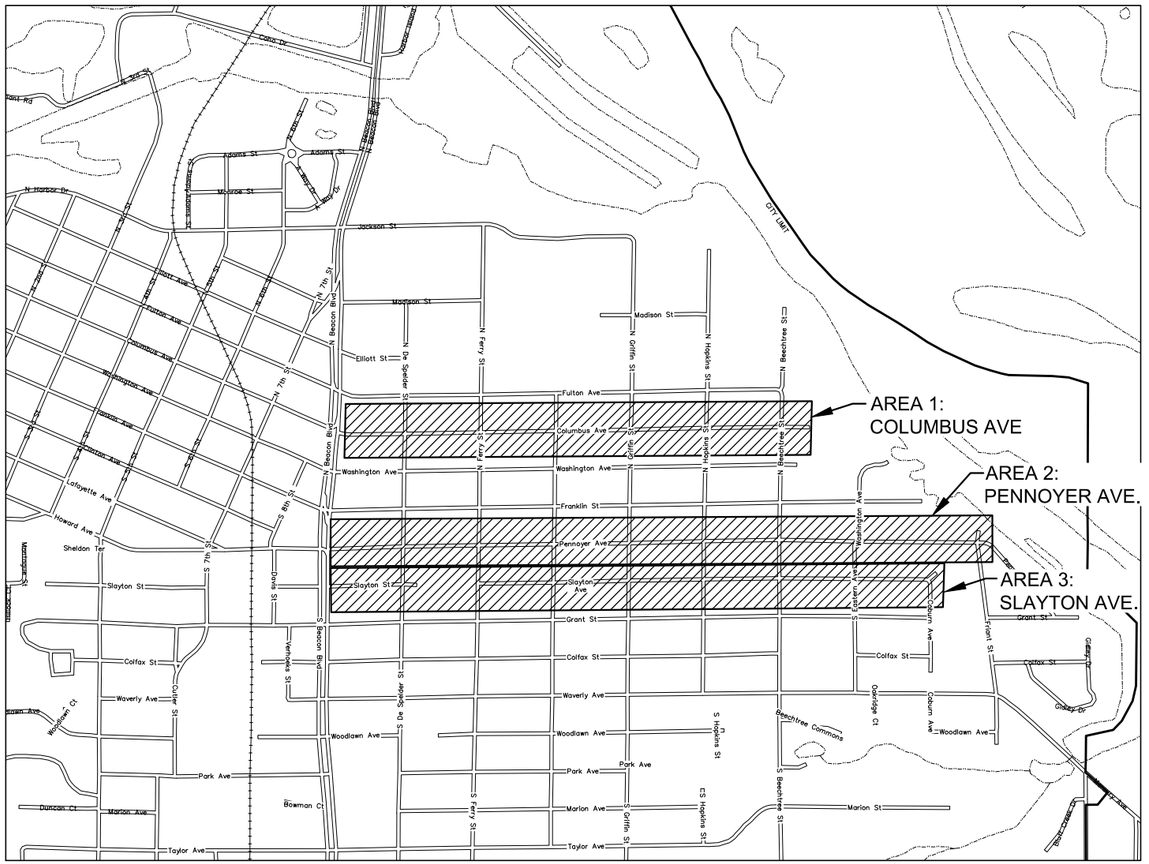
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INDEX OF SHEETS	
SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
2	STANDARD DETAILS & NOTES - 1
3	COLUMBUS AVENUE - 1
4	COLUMBUS AVENUE - 2
5	COLUMBUS AVENUE - 3
6	PENNOYER AVENUE - 1
7	PENNOYER AVENUE - 2
8	PENNOYER AVENUE - 3
9	PENNOYVER AVENUE - 4
10	SLAYTON AVENUE - 1
11	SLAYTON AVENUE - 2

CITY OF GRAND HAVEN

LEAD SERVICE LINE REPLACEMENT PROJECT



PROJECT LOCATION MAP

CITY OFFICIALS

BOB MONETZA	MAYOR
MIKE DORA	MAYOR PRO-TEM
MICHAEL D. FRITZ	COUNCIL MEMBER
SARAH KALLIO	COUNCIL MEMBER
ERIN LYON	COUNCIL MEMBER
ASHLEY LATSCH	CITY MANAGER
MICHAEL ENGLAND	PUBLIC WORKS DIRECTOR

NOTES:

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.



COUNTY KEY

LOCAL UTILITIES

SEWER & WATER
CITY OF GRAND HAVEN
PUBLIC WORKS
1120 JACKSON STREET
GRAND HAVEN, MI 49417
MICHAEL ENGLAND
(616) 847-3493

ELECTRIC:
GRAND HAVEN BOARD
OF LIGHT AND POWER
1700 EATON DRIVE
GRAND HAVEN, MI 49417
ROBERT SHELLEY
(616) 607-1263

CABLE:
CHARTER COMMUNICATIONS
1433 FULTON ST
GRAND HAVEN, MI 49417
BRAD KULICAMP
(616) 607-2356

GAS:
MICHIGAN GAS
1708 EATON DRIVE
GRAND HAVEN, MI 49417
TODD SUBKA
(616) 844-7519

TELEPHONE:
AT&T
245 EAST 24TH STREET
HOLLAND, MI 49423
RICK ARENDSEN
(616) 392-7017

PIPELINE:
WOLVERINE PIPE LINE COMPANY
8075 CREEKSIDE DRIVE, SUITE 210
PORTAGE, MI 49024
DUNCAN MACLEOD
(616) 916-0055

FIBER:
COMCAST
RACHEL GENTRY
(248) 514-8613

CALL MISS DIG

FOR PROTECTION OF THE UNDERGROUND UTILITIES, THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING CONSTRUCTION OPERATIONS. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.

811
Know what's **below.**
Call before you dig.

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CITY OF GRAND HAVEN
LEAD SERVICE LINE REPLACEMENT PROJECT
TITLE SHEET

PM: LNB QA / QC: TRD

#	ISSUANCE / REVISION	DATE
1	AS ADVERTISED	11/4/2026

ISSUE DATE: 11/4/2026
PROJECT NO: 26-1174

O:\PROJECTS\2026\26-1174 GRAND HAVEN LEAD SERVICE LINE REPLACEMENTS PROJECT\20 CIVIL\24 CAD\PLANS\26-1174 TL.DWG 17 TL MADELYN LANDRY 11.4.2026 2:09 PM

GENERAL NOTES:

MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION SHALL PREVAIL, UNLESS INDICATED OTHERWISE.

AT LEAST THREE WORKING DAYS PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REQUEST THE LOCATIONS OF ALL UTILITIES BY CALLING MISS DIG. REGARDLESS OF DURATION, NO WORK SHALL COMMENCE UNTIL THE MISS DIG REQUEST HAS CLEARED.

ALL TRENCH AND BEDDING SPECIFIED SHALL BE PER MDOT STANDARD PLAN R-83-C UNLESS OTHERWISE NOTED ON THE PLANS. WHERE NEW UTILITIES CROSS BENEATH AN EXISTING UTILITY, UTILIZE TRENCH DETAIL E IN ACCORDANCE WITH MDOT STANDARD PLAN R-83-C.

ANY EXCESS/UNSUITABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND THEY SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF THIS MATERIAL.

DEWATERING, IF REQUIRED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NO EXTRA PAYMENT SHALL BE MADE THEREFORE.

ALL EXISTING FEATURES AND IMPROVEMENTS (INCLUDING TREES, LANDSCAPING, ETC) NOT DESIGNATED FOR REMOVAL SHALL BE PROTECTED BY THE CONTRACTOR. DAMAGED ITEMS SHALL BE RESTORED TO THE ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE. ALL TREES DAMAGED BEYOND SAVING, AS DETERMINED BY THE ENGINEER, SHALL BE REMOVED AND REPLACED WITH A NURSERY GROWN TREE AS SPECIFIED BY THE ENGINEER.

ROADWAY:

RESTORATION OF EXISTING SAND SUBBASE, AGGREGATE BASE, CONCRETE, AND/OR HMA SHALL MATCH EXISTING DEPTHS SURROUNDING ANY TRENCHES DUG FOR WATER SERVICE REPLACEMENTS.

BACKFILL MATERIAL WITHIN THE ZONE OF INFLUENCE OF A ROADWAY SHALL BE CLASS II SAND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY IN 12" MAXIMUM LIFTS.

PAVEMENT DESIGNATED FOR REMOVAL SHALL BE SAWCUT FULL DEPTH AT REMOVAL LIMITS PRIOR TO REMOVAL. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY RAMPS AND/OR SECONDARY SAWCUTS IN ORDER TO PROVIDE A NEAT JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT. NO EXTRA PAYMENT WILL BE MADE FOR ADDITIONAL SAWCUTTING WORK OR PAVEMENT REMOVAL BEYOND THE REMOVAL LIMITS IN ORDER TO ADDRESS DETERIORATION OF EXISTING PAVEMENT DUE TO TRAFFIC EXPOSURE DURING CONSTRUCTION.

WATER MAIN:

THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE CITY TO REQUEST A WATER SERVICE SHUTOFF. THE CITY SHALL DETERMINE THE TIME & DURATION OF THE SHUTOFF.

AVOID PLACING CURB STOPS AND METER PITS WITHIN PAVED AREAS. WHERE METER PITS MUST BE INSTALLED IN PAVED AREAS, FURNISH WITH TRAFFIC BEARING STRUCTURE AND CITY LOGO COVER.

ALL COSTS FOR WATER SERVICE REMOVALS SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE NEW WATER SERVICE.

Miscellaneous Quantities Item Description	Unit	Sht 2 Quantity
Mobilization, Max	LSUM	1
Maintaining Traffic	LSUM	1
Maintenance Gravel, LM	Cyd	50
Conc Pavt, Misc, Nonreinf, 6 inch	Syd	100
Internal Plumbing Reconfiguration	ALLOW	1
Exploratory Investigation, Vertical	Ft	100
Water Main Corp Replacement, 1 inch	Ea	15

MDOT STANDARD PLANS (INCLUDED BY REFERENCE)

R-28-K CURB RAMP AND DETECTABLE WARNING DETAILS
R-29-J DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS
R-30-G CONCRETE CURB AND CONCRETE CURB & GUTTER
R-44-G CONCRETE PAVEMENT REPARI
R-83-C UTILITY TRENCHES
R-100-I SEEDINGS AND TREE PLANTING

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LEAD SERVICE LINE REPLACEMENT PROJECT

STANDARD DETAILS AND NOTES - 1

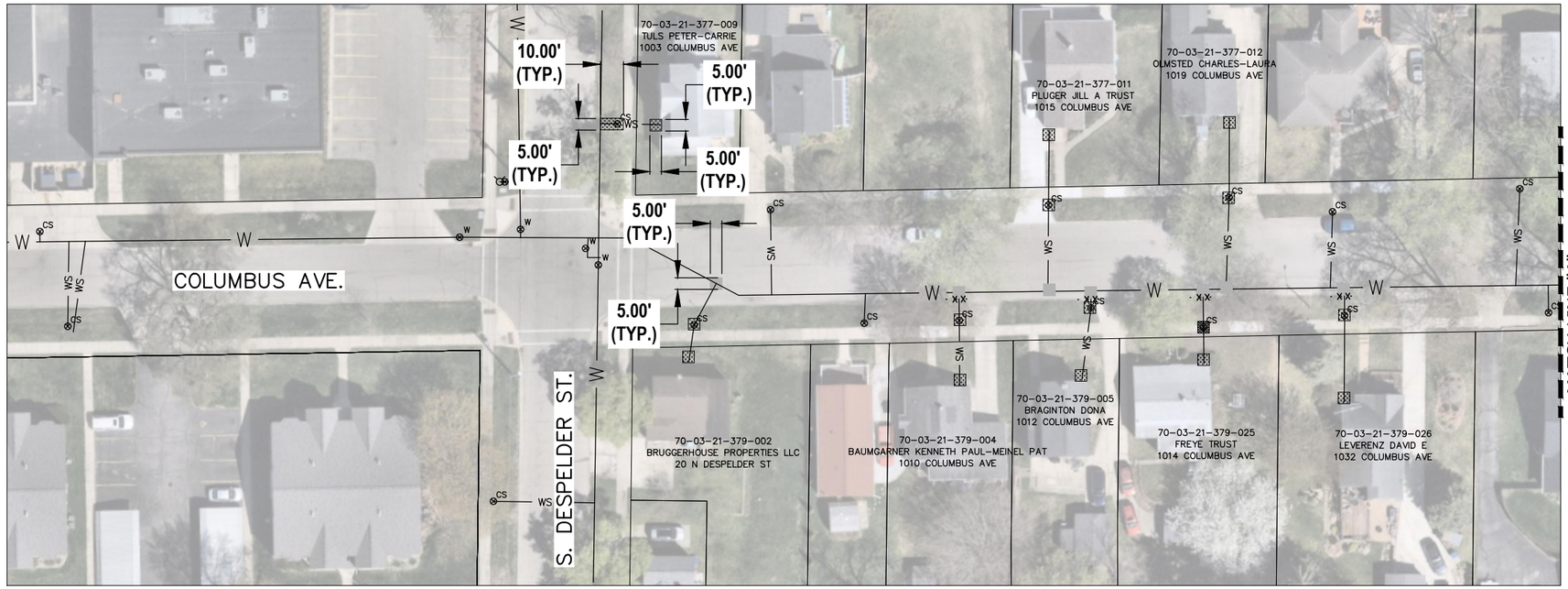
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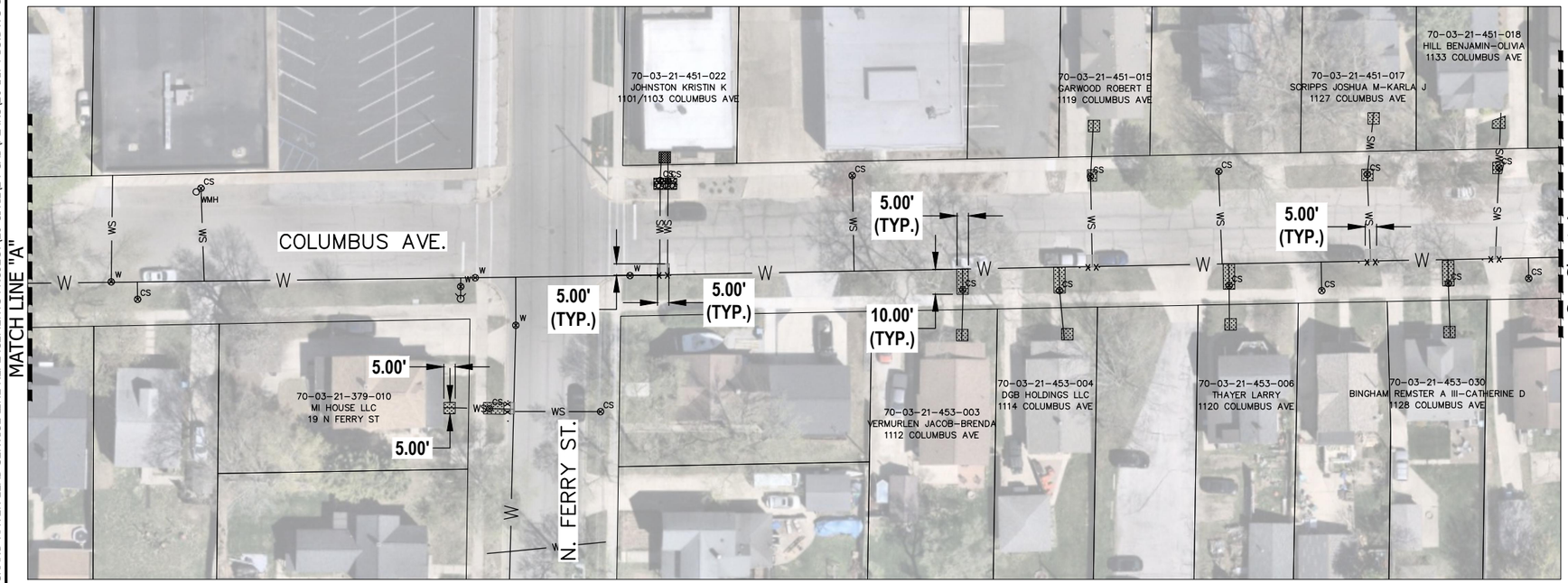
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Item Description	Unit	Sht 3 Quantity
Curb and Gutter, Rem	Ft	50
Sidewalk, Rem	Syd	10
Pavt, Rem, Modified	Syd	35
Subbase, CIP	Cyd	15
Aggregate Base, 8 inch	Syd	50
HMA, 5EML	Ton	10
Sidewalk, Conc, 4 inch	Sft	55
Curb and Gutter, Conc, Det C4	Ft	50
Water Serv, 1 inch, Modified	Ft	870
Private Water Serv, 1 inch, Conn to Ex	Ea	18
Curb Stop and Box	Ea	18
Slope Restoration, Non-Freeway, Type E	Syd	110

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1003 COLUMBUS AVE
20 N DESPELDER ST
1010 COLUMBUS AVE
1012 COLUMBUS AVE
1014 COLUMBUS AVE
1015 COLUMBUS AVE
1019 COLUMBUS AVE
1032 COLUMBUS AVE
19 N FERRY ST
1101 COLUMBUS AVE
1103 COLUMBUS AVE
1112 COLUMBUS AVE
1114 COLUMBUS AVE
1119 COLUMBUS AVE
1120 COLUMBUS AVE
1127 COLUMBUS AVE
1128 COLUMBUS AVE
1133 COLUMBUS AVE
TOTAL: 18

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- GRAVEL TO BE RAKED ASIDE AND REESTABLISHED FOLLOWING COMPLETION
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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LEAD SERVICE LINE REPLACEMENT PROJECT

COLUMBUS AVENUE - 1

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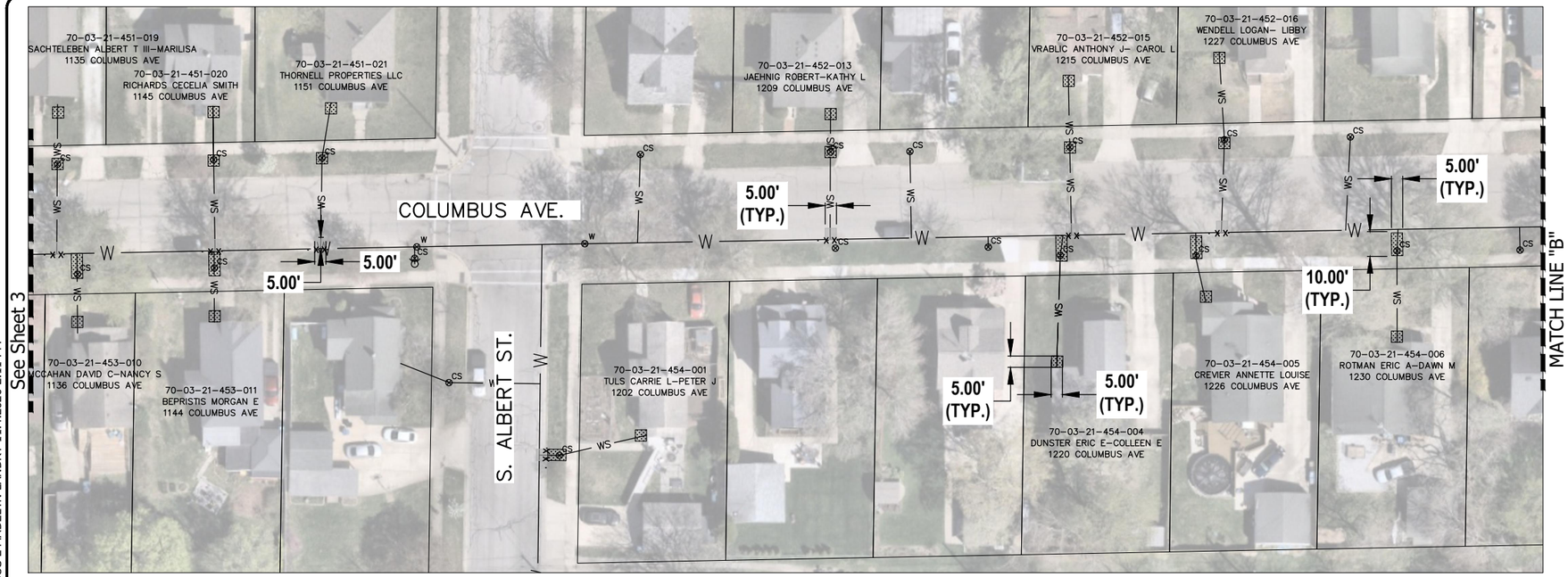
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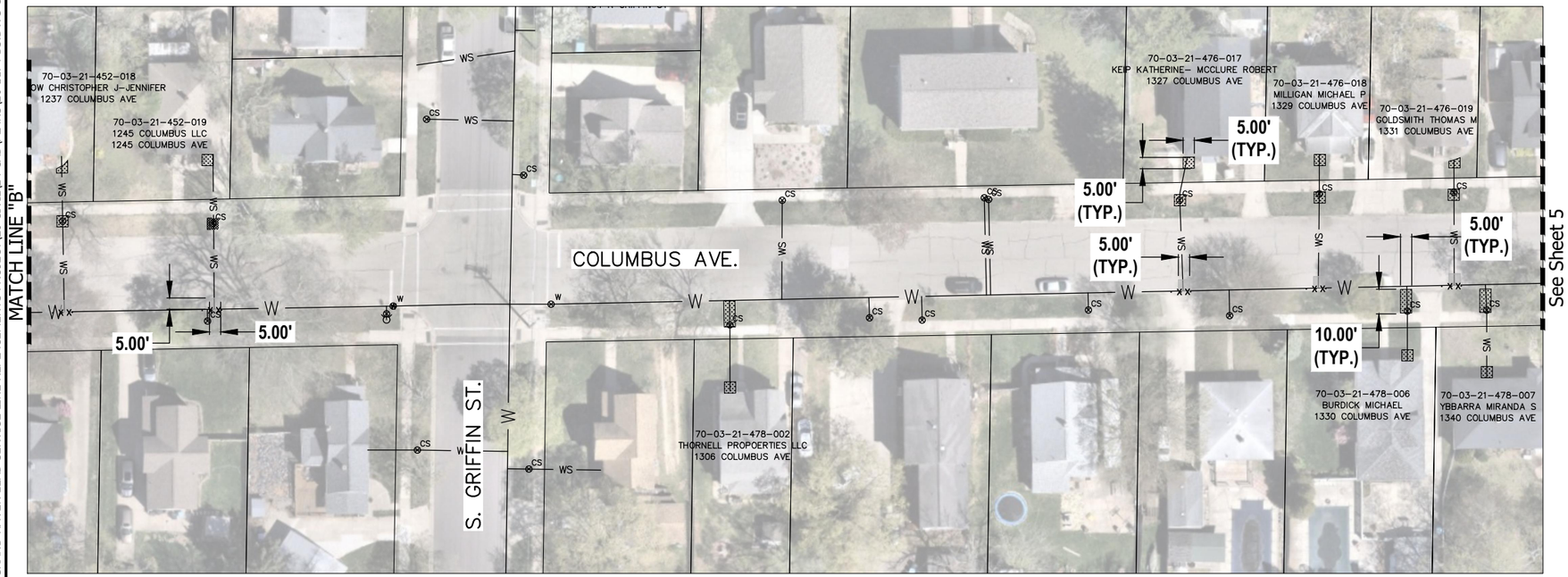
ISSUE DATE: 11/4/2026

PROJECT NO: 26-1174

3 OF 11

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Item Description	Unit	Sht 4 Quantity
Curb and Gutter, Rem	Ft	65
Pavt, Rem, Modified	Syd	35
Subbase, CIP	Cyd	15
Aggregate Base, 8 inch	Syd	50
HMA, 5EML	Ton	10
Driveway, Nonreinf Conc, 6 inch	Syd	5
Curb and Gutter, Conc, Det C4	Ft	65
Water Serv, 1 inch, Modified	Ft	1225
Private Water Serv, 1 inch, Conn to Ex	Ea	20
Curb Stop and Box	Ea	20
Slope Restoration, Non-Freeway, Type E	Syd	140

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1135 COLUMBUS AVE
1136 COLUMBUS AVE
1144 COLUMBUS AVE
1145 COLUMBUS AVE
1151 COLUMBUS AVE
1202 COLUMBUS AVE
1209 COLUMBUS AVE
1215 COLUMBUS AVE
1220 COLUMBUS AVE
1226 COLUMBUS AVE
1227 COLUMBUS AVE
1230 COLUMBUS AVE
1237 COLUMBUS AVE
1245 COLUMBUS AVE
1306 COLUMBUS AVE
1327 COLUMBUS AVE
1329 COLUMBUS AVE
1330 COLUMBUS AVE
1331 COLUMBUS AVE
1340 COLUMBUS AVE
TOTAL: 20

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
  DRIVEWAY, NONREINF CONC, 6 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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LEAD SERVICE LINE REPLACEMENT PROJECT

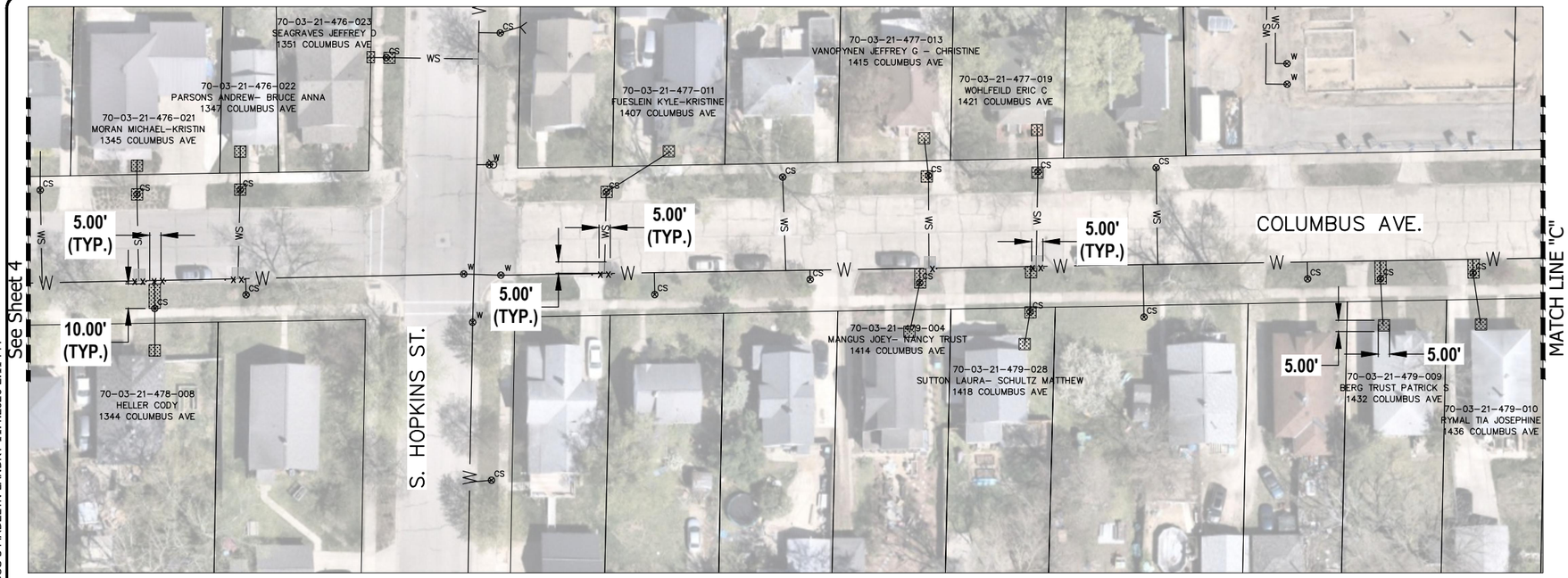
COLUMBUS AVENUE - 2

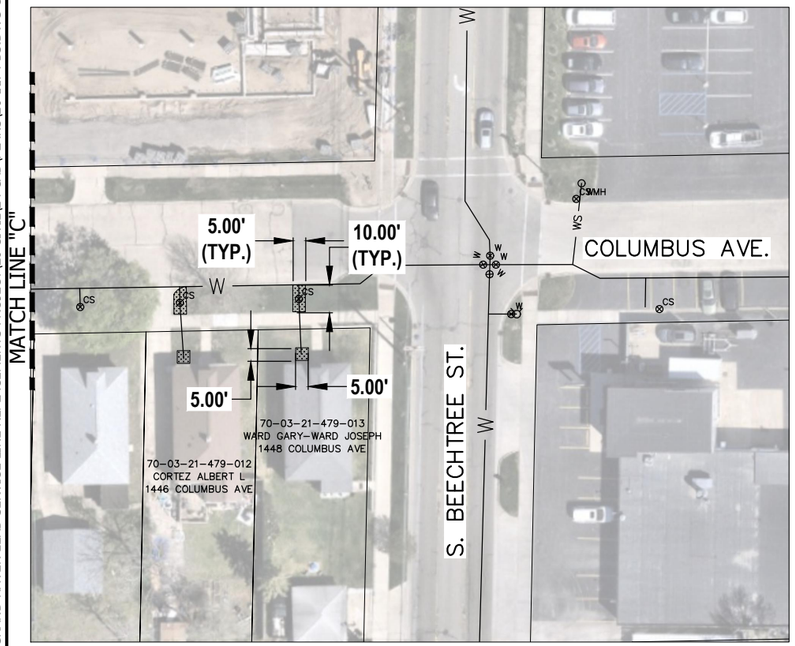
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Item Description	Unit	Sht 5 Quantity
Curb and Gutter, Rem	Ft	35
Pavt, Rem, Modified	Syd	20
Subbase, CIP	Cyd	10
Aggregate Base, 8 inch	Syd	25
HMA, 5EML	Cyd	5
Curb and Gutter, Conc, Det C4	Syd	35
Water Serv, 1 inch, Modified	Ft	540
Private Water Serv, 1 inch, Conn to Ex	Ea	13
Curb Stop and Box	Ea	13
Slope Restoration, Non-Freeway, Type E	Syd	100

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1344 COLUMBUS AVE
1345 COLUMBUS AVE
1347 COLUMBUS AVE
1351 COLUMBUS AVE
1407 COLUMBUS AVE
1414 COLUMBUS AVE
1415 COLUMBUS AVE
1418 COLUMBUS AVE
1421 COLUMBUS AVE
1432 COLUMBUS AVE
1436 COLUMBUS AVE
1446 COLUMBUS AVE
1448 COLUMBUS AVE
TOTAL: 13

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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LEAD SERVICE LINE REPLACEMENT PROJECT

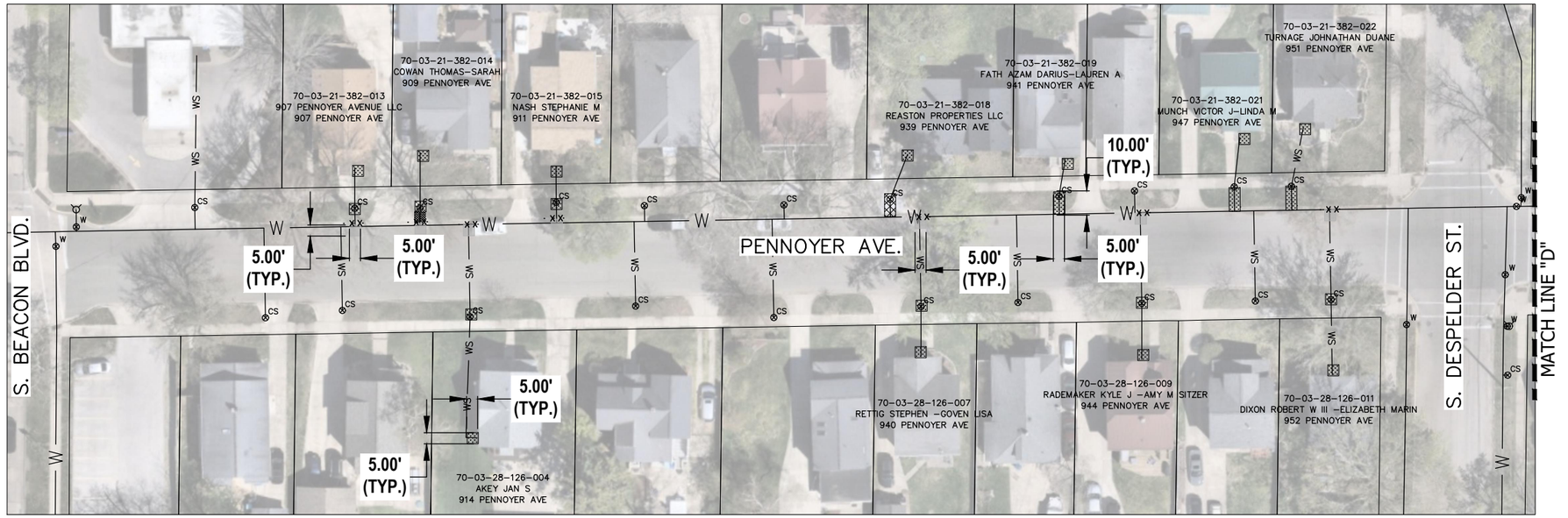
COLUMBUS AVENUE - 3

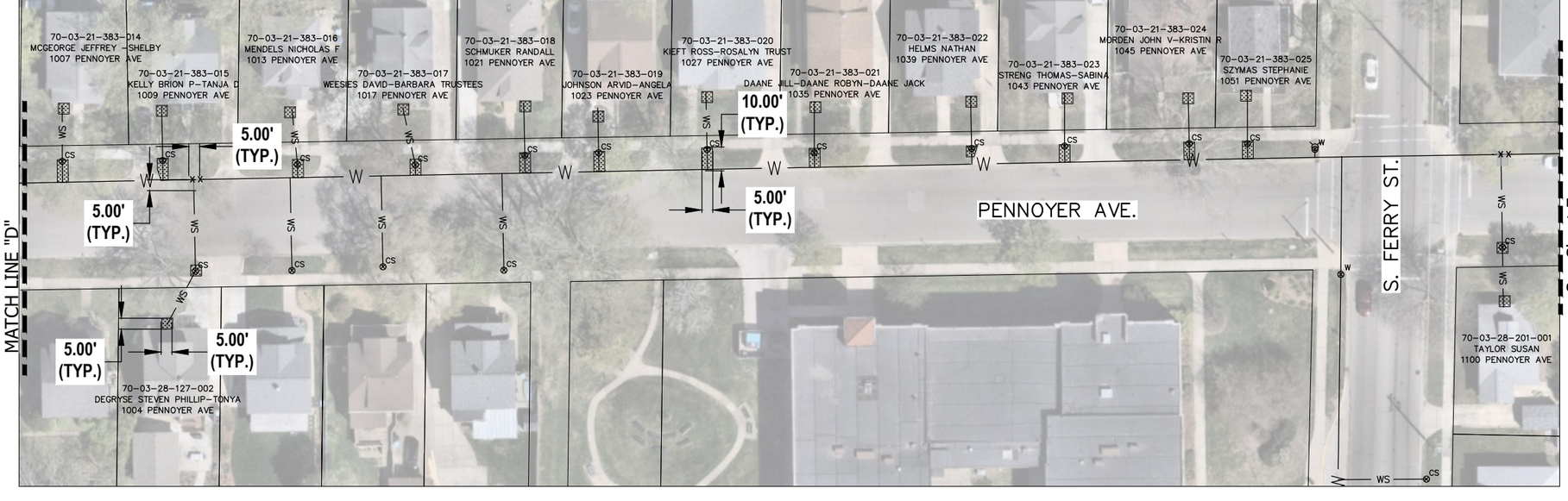
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Item Description	Unit	Sht 6 Quantity
Curb and Gutter, Rem	Ft	50
Pavt, Rem, Modified	Syd	30
Subbase, CIP	Cyd	10
Aggregate Base, 8 inch	Syd	40
HMA, 5EML	Ton	10
Driveway, Nonreinf Conc, 6 inch	Syd	20
Curb and Gutter, Conc, Det C4	Ft	50
Water Serv, 1 inch, Modified	Ft	1100
Private Water Serv, 1 inch, Conn to Ex	Ea	25
Curb Stop and Box	Ea	25
Slope Restoration, Non-Freeway, Type E	Syd	190

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
907 PENNOYER AVE
909 PENNOYER AVE
911 PENNOYER AVE
914 PENNOYER AVE
939 PENNOYER AVE
940 PENNOYER AVE
941 PENNOYER AVE
944 PENNOYER AVE
947 PENNOYER AVE
951 PENNOYER AVE
952 PENNOYER AVE
1004 PENNOYER AVE
1007 PENNOYER AVE
1009 PENNOYER AVE
1013 PENNOYER AVE
1017 PENNOYER AVE
1021 PENNOYER AVE
1023 PENNOYER AVE
1027 PENNOYER AVE
1035 PENNOYER AVE
1039 PENNOYER AVE
1043 PENNOYER AVE
1045 PENNOYER AVE
1051 PENNOYER AVE
1100 PENNOYER AVE
TOTAL: 25

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
  DRIVEWAY, NONREINF CONC, 6 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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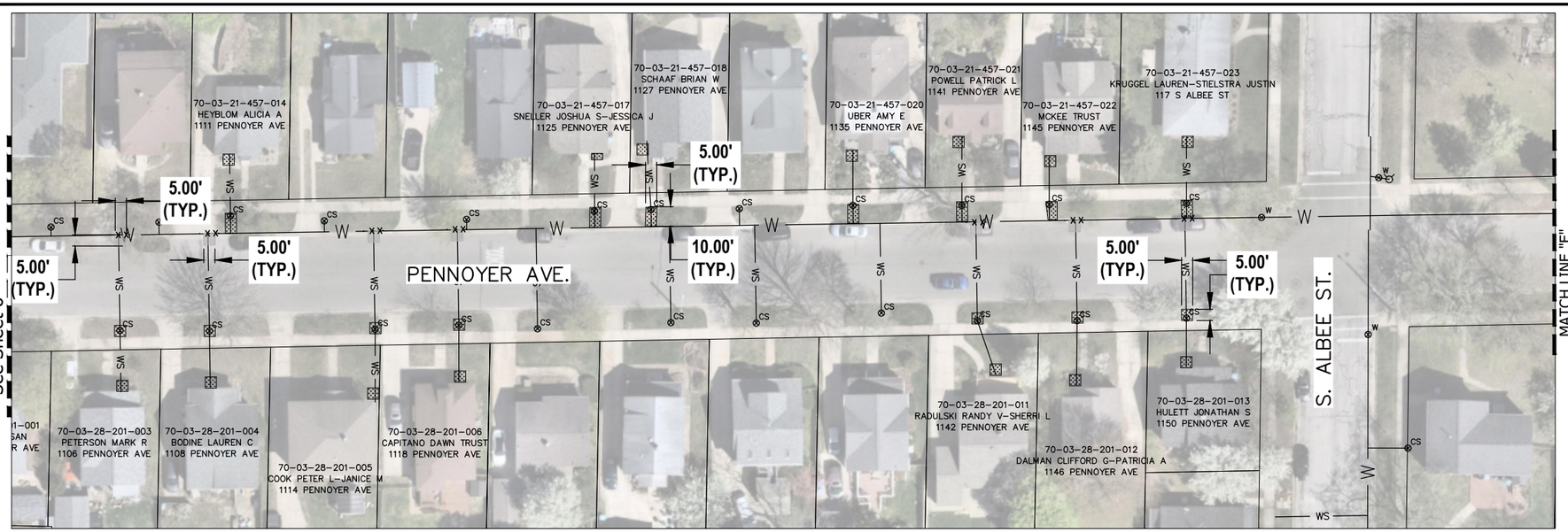
PENNOYER AVENUE - 1

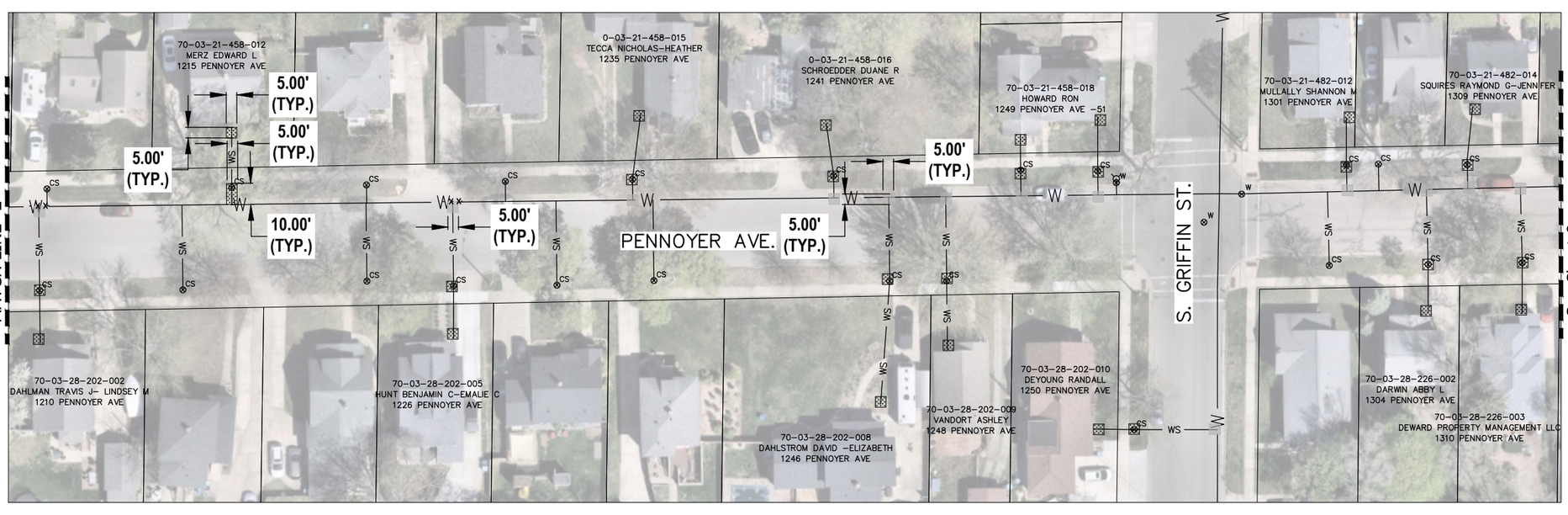
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Item Description	Unit	Sht 7 Quantity
Curb and Gutter, Rem	Ft	50
Pavt, Rem, Modified	Syd	60
Subbase, CIP	Cyd	20
Aggregate Base, 8 inch	Syd	70
HMA, 5EML	Ton	15
Curb and Gutter, Conc, Det C4	Ft	50
Water Serv, 1 inch, Modified	Ft	1645
Private Water Serv, 1 inch, Conn to Ex	Ea	28
Curb Stop and Box	Ea	28
Slope Restoration, Non-Freeway, Type E	Syd	190

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1106 PENNOYER AVE
1108 PENNOYER AVE
1111 PENNOYER AVE
1114 PENNOYER AVE
1118 PENNOYER AVE
1125 PENNOYER AVE
1127 PENNOYER AVE
1135 PENNOYER AVE
1141 PENNOYER AVE
1142 PENNOYER AVE
1145 PENNOYER AVE
1146 PENNOYER AVE
1150 PENNOYER AVE
117 S ALBEE ST
1210 PENNOYER AVE
1215 PENNOYER AVE
1226 PENNOYER AVE
1235 PENNOYER AVE
1241 PENNOYER AVE
1246 PENNOYER AVE
1248 PENNOYER AVE
1249 PENNOYER AVE
1250 PENNOYER AVE
1251 PENNOYER AVE
1301 PENNOYER AVE
1304 PENNOYER AVE
1309 PENNOYER AVE
1310 PENNOYER AVE
TOTAL: 28

LEGEND

CURB AND GUTTER, REM
AGGREGATE BASE, 8 INCH
CURB AND GUTTER, CONC, DET C4

SLOPE RESTORATION, TYPE B

SIDEWALK, REM
SIDEWALK, CONC, 4 INCH

PAVT, REM, MODIFIED
HMA, 5EML
SUBBASE, CIP
AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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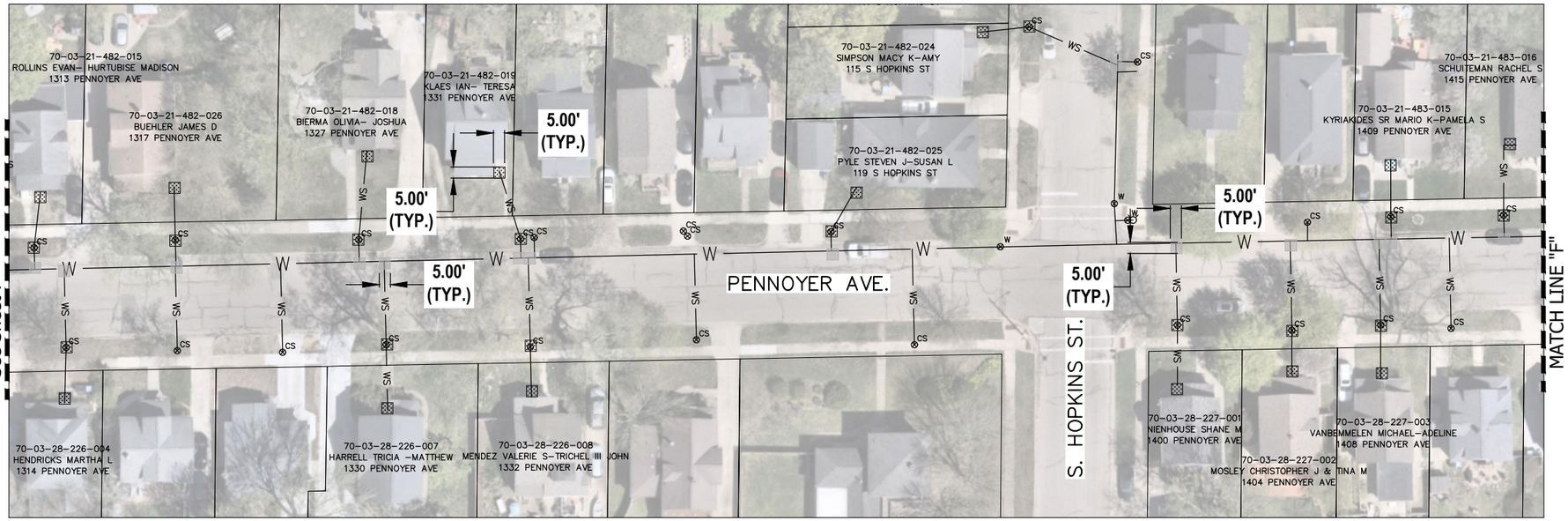
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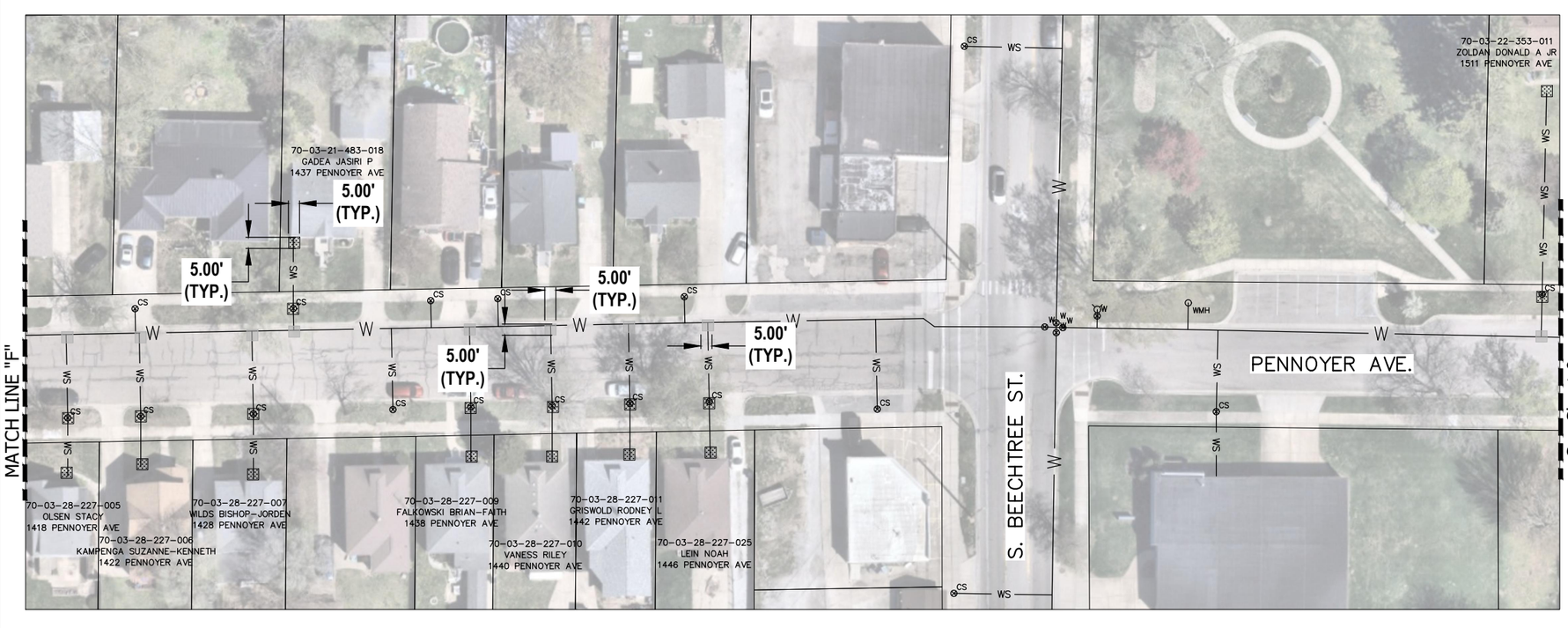
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Item Description	Unit	Sht 8 Quantity
Pavt, Rem, Modified	Syd	70
Subbase, CIP	Cyd	25
Aggregate Base, 8 inch	Syd	70
HMA, 5EML	Ton	15
Water Serv, 1 inch, Modified	Ft	1365
Private Water Serv, 1 inch, Conn to Ex	Ea	23
Curb Stop and Box	Ea	23
Slope Restoration, Non-Freeway, Type E	Syd	135

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1313 PENNOYER AVE
1314 PENNOYER AVE
1317 PENNOYER AVE
1327 PENNOYER AVE
1330 PENNOYER AVE
1331 PENNOYER AVE
1332 PENNOYER AVE
115 S HOPKINS ST
119 S HOPKINS ST
1400 PENNOYER AVE
1404 PENNOYER AVE
1408 PENNOYER AVE
1409 PENNOYER AVE
1415 PENNOYER AVE
1418 PENNOYER AVE
1422 PENNOYER AVE
1428 PENNOYER AVE
1437 PENNOYER AVE
1438 PENNOYER AVE
1440 PENNOYER AVE
1442 PENNOYER AVE
1446 PENNOYER AVE
1511 PENNOYER AVE
TOTAL: 23

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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LEAD SERVICE LINE REPLACEMENT PROJECT

PENNOYER AVENUE - 3

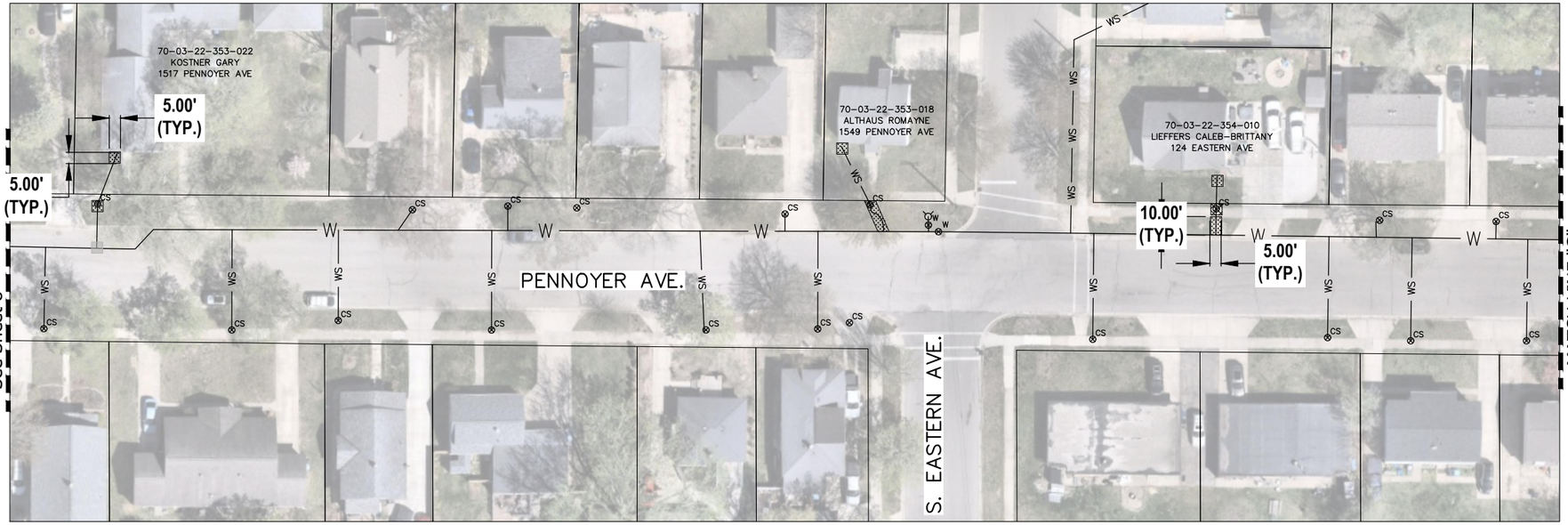
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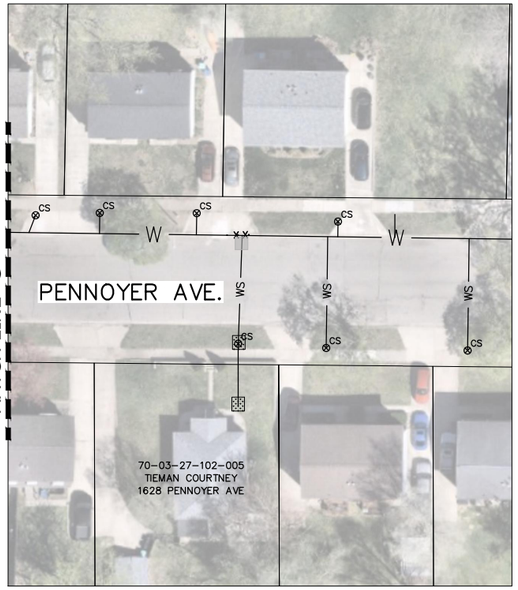
#	ISSUANCE / REVISION	DATE
1	AS ADVERTISED	11/4/2026

ISSUE DATE: 11/4/2026
PROJECT NO: 26-1174

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Item Description	Unit	Sht 9 Quantity
Curb and Gutter, Rem	Ft	10
Sidewalk, Rem	Syd	5
Pavt, Rem, Modified	Syd	10
Subbase, CIP	Cyd	5
Aggregate Base, 8 inch	Syd	10
HMA, 5EML	Ton	5
Sidewalk, Conc, 4 inch	Sft	30
Curb and Gutter, Conc, Det C4	Ft	10
Water Serv, 1 inch, Modified	Ft	195
Private Water Serv, 1 inch, Conn to Ex	Ea	4
Curb Stop and Box	Ea	4
Slope Restoration, Non-Freeway, Type E	Syd	30

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1517 PENNOYER AVE
1549 PENNOYER AVE
124 EASTERN AVE
1628 PENNOYER AVE
TOTAL: 4

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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CITY OF GRAND HAVEN

LEAD SERVICE LINE REPLACEMENT PROJECT

PENNOYER AVENUE - 4

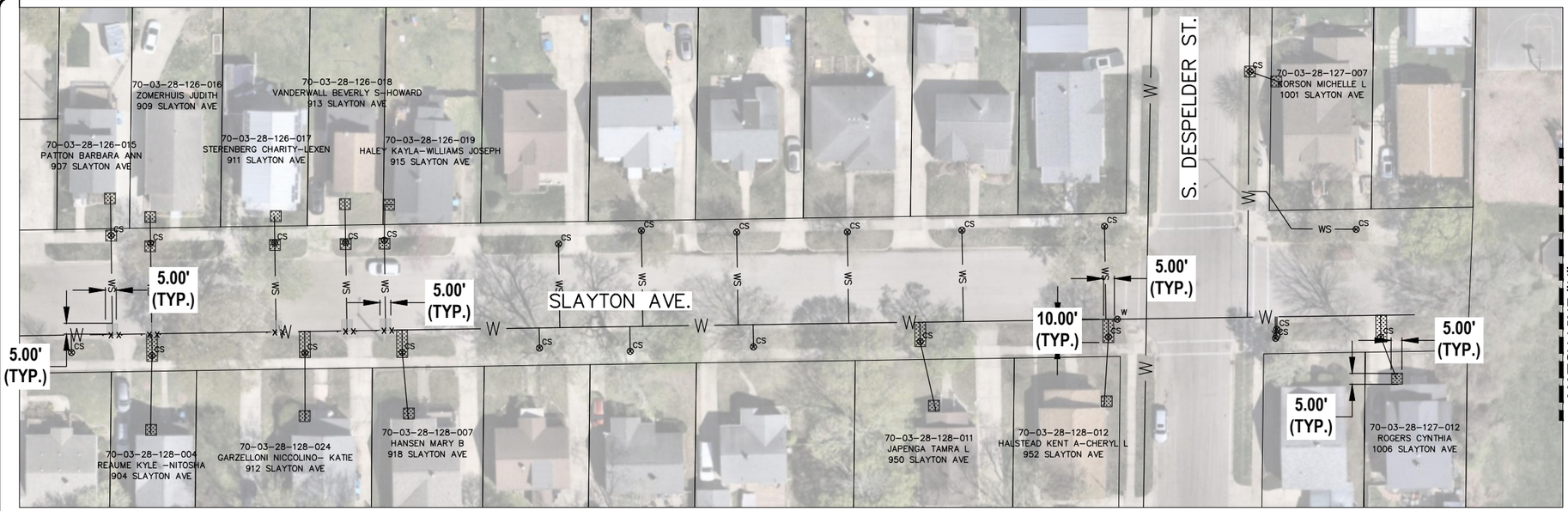
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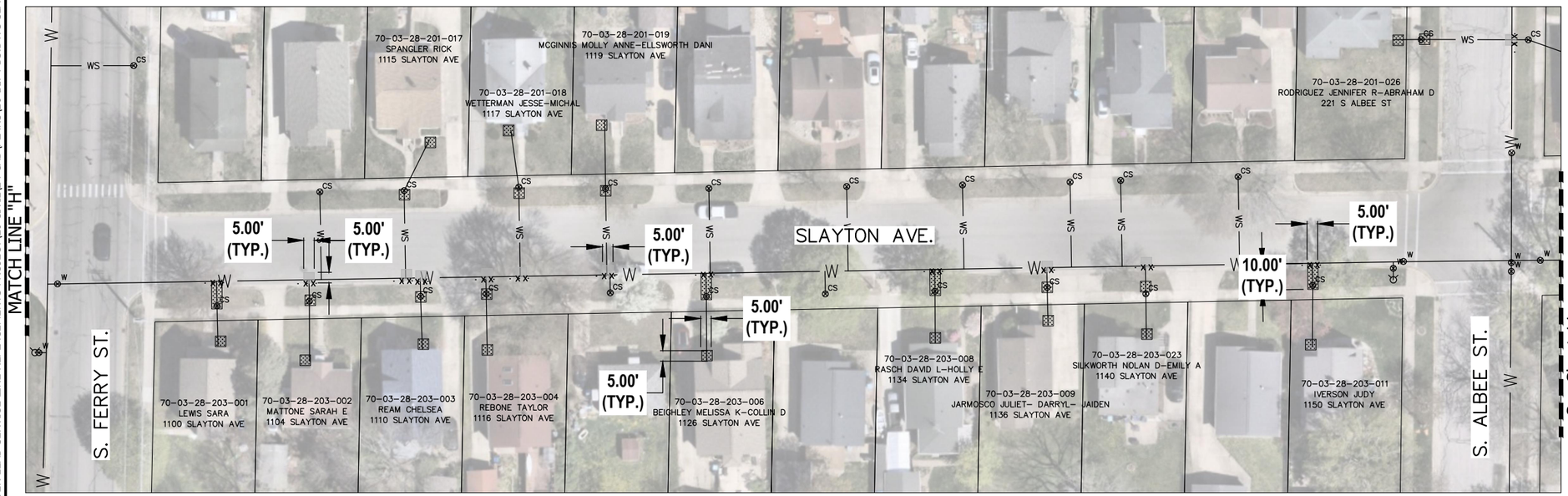
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Item Description	Unit	Sht 10 Quantity
Curb and Gutter, Rem	Ft	95
Sidewalk, Rem	Syd	5
Pavt, Rem, Modified	Syd	45
Subbase, CIP	Cyd	15
Aggregate Base, 8 inch	Syd	65
HMA, 5EML	Ton	10
Sidewalk, Conc, 4 inch	Sft	30
Curb and Gutter, Conc, Det C4	Ft	95
Water Serv, 1 inch, Modified	Ft	1195
Private Water Serv, 1 inch, Conn to Ex	Ea	25
Curb Stop and Box	Ea	25
Slope Restoration, Non-Freeway, Type E	Syd	175

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
904 SLAYTON AVE
907 SLAYTON AVE
909 SLAYTON AVE
911 SLAYTON AVE
912 SLAYTON AVE
913 SLAYTON AVE
915 SLAYTON AVE
918 SLAYTON AVE
950 SLAYTON AVE
952 SLAYTON AVE
1001 SLAYTON AVE
1006 SLAYTON AVE
1100 SLAYTON AVE
1104 SLAYTON AVE
1110 SLAYTON AVE
1115 SLAYTON AVE
1116 SLAYTON AVE
1117 SLAYTON AVE
1119 SLAYTON AVE
1126 SLAYTON AVE
1134 SLAYTON AVE
1136 SLAYTON AVE
1140 SLAYTON AVE
1150 SLAYTON AVE
221 S ALBEE ST
TOTAL: 25

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

SCALE IN FEET
0 30 60
1" = 60'

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LEAD SERVICE LINE REPLACEMENT PROJECT

SLAYTON AVENUE - 1

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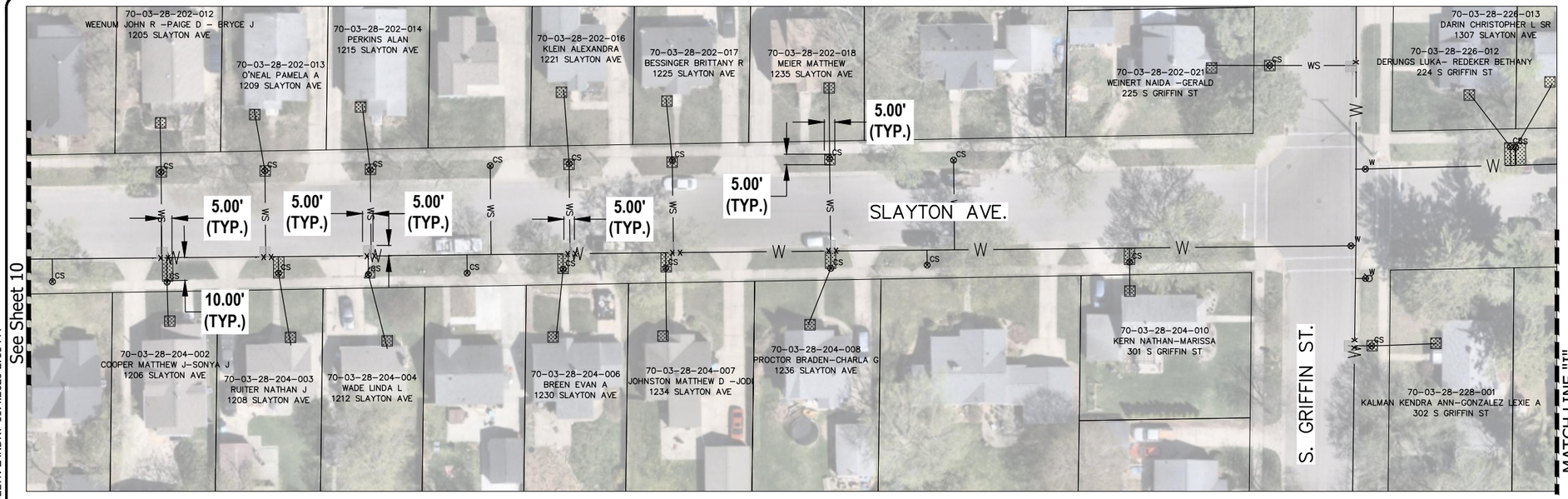
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Item Description	Unit	Sht 11 Quantity
Curb and Gutter, Rem	Ft	55
Pavt, Rem, Modified	Syd	30
Subbase, CIP	Cyd	10
Aggregate Base, 8 inch	Syd	45
HMA, 5EML	Ton	10
Curb and Gutter, Conc, Det C4	Ft	55
Water Serv, 1 inch, Modified	Ft	1095
Private Water Serv, 1 inch, Conn to Ex	Ea	19
Curb Stop and Box	Ea	19
Slope Restoration, Non-Freeway, Type E	Syd	140

LEGEND

- CURB AND GUTTER, REM
  AGGREGATE BASE, 8 INCH
  CURB AND GUTTER, CONC, DET C4
- SLOPE RESTORATION, TYPE B
- SIDEWALK, REM
  SIDEWALK, CONC, 4 INCH
- PAVT, REM, MODIFIED
  HMA, 5EML
  SUBBASE, CIP
  AGGREGATE BASE, 8 INCH

ADDRESSES THIS SHEET (ALL FULL REPLACEMENTS)
1205 SLAYTON AVE
1206 SLAYTON AVE
1208 SLAYTON AVE
1209 SLAYTON AVE
1212 SLAYTON AVE
1215 SLAYTON AVE
1221 SLAYTON AVE
1225 SLAYTON AVE
1230 SLAYTON AVE
1234 SLAYTON AVE
1235 SLAYTON AVE
1236 SLAYTON AVE
225 S GRIFFIN ST
301 S GRIFFIN ST
302 S GRIFFIN ST
224 S GRIFFIN ST
1307 SLAYTON AVE
1406 SLAYTON AVE
1412 SLAYTON AVE
TOTAL: 19

SCALE IN FEET
0 30 60
1" = 60'

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CITY OF GRAND HAVEN

LEAD SERVICE LINE REPLACEMENT PROJECT

SLAYTON AVENUE - 2

PM: LNB QA / QC: TRD

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ISSUE DATE: 11/4/2026
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