

# PROJECT MANUAL

## CITY OF NORTHVILLE WAYNE AND OAKLAND COUNTIES, MI



## 2023 SIDEWALK PROGRAM

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**SECTION 00 11 13**

**ADVERTISEMENT FOR BIDS**

**City of Northville  
2023 Sidewalk Program**

The City of Northville is requesting Bids for the construction of 2023 Sidewalk Program. Bids for the construction of the project will be received at the City Hall located at 215 W. Main Street, Northville, MI 48167 until **10:00 a.m.** local time, **Wednesday, May 3, 2023**. At that time the Bids received will be publicly opened and read.

The project includes the removal and replacement of approximately 2000 square feet of concrete sidewalk and curb ramp removal and replacement and related items of work.

Bids will be accepted only from Plan Holders of Record. In order to be a Plan Holder of Record Bidding Documents must be downloaded from BidNet as portable document format (PDF) files.

The date that the Bidding Documents are downloaded from BidNet will be considered the Bidder's date of receipt of the Bidding Documents. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than BidNet.

Bidding Documents may be examined at the following locations:  
Fleis & VandenBrink Engineering, Inc., 27725 Stansbury Blvd, Suite 195 Farmington Hills, MI 48334.

A pre-bid meeting will not be held. Bid security shall be furnished in accordance with the Instructions to Bidders.

The City of Northville reserves the right to accept any bid, reject any or all bids, to waive informalities and make the award in any manner deemed in the best interest of the City of Northville.

City of Northville  
Michael Smith  
Clerk

**END OF SECTION**

## SECTION 00 21 13

### INSTRUCTIONS TO BIDDERS

#### ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.
  - B. *Plan Holders* – Entities that obtain Bidding Documents from the Issuing Office.

#### 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 may establish a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner requires 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 Bidders registered as a plan holder can 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) will make the Bidding Documents available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are required 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 Portable Document Format (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

## **ARTICLE 3 - QUALIFICATIONS OF BIDDERS**

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five days of Owner's request, Bidder must submit the following information:
  - A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
  - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
  - C. Bidder's state or other contractor license number, if applicable.
  - D. Subcontractor and Supplier qualification information.
  - E. Other required information regarding qualifications.
- 3.02 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 pre-bid conference will not be conducted for this Project.

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

**5.01**     *Site and Other Areas*

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

**5.02**     *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
  - 1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
    - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
    - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
    - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
    - d. Technical Data contained in such reports and drawings.
  - 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
  - 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
  - 4. *Geotechnical Baseline Report/Geotechnical Data Report*: The Bidding Documents contain a Geotechnical Baseline Report (GBR) and Geotechnical Data Report (GDR).
    - a. As set forth in the Supplementary Conditions, the GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.
    - b. The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.
    - c. Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.
    - d. As set forth in the Supplementary Conditions, the GDR is a Contract Document containing data prepared by or for the Owner in support of the GBR.

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

#### 5.03 *Other Site-related Documents*

- A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, record drawings at or adjacent to the Site are known to Owner and made available to Bidders for reference. Owner will make copies of these other Site-related documents available to any Bidder on request.
- B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.
- C. The other Site-related documents are not part of the Contract Documents.
- D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.
- E. No other Site-related documents are available.

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

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. If a pre-bid conference is held, a Site visit may be held immediately following the conference.
- C. Bidder may conduct a Site visit on publicly available lands at Bidders convenience.
- D. Bidder may request a Site visit on private property and restricted areas during normal working hours.
- E. Bidders visiting the Site are required to arrange their own transportation to the Site.
- F. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- G. 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.



- H. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- I. 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.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered Plan Holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

## **ARTICLE 8 - BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% 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 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 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.

## **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 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 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.
- 11.03 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 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.
- 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.

### **ARTICLE 14 - SUBMITTAL OF BID**

- 14.01 The Bidding Documents include the Bid Form, and, if required, the Bid Bond Form. The Bid Form is to be printed, completed, and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

## **ARTICLE 15 - MODIFICATION AND WITHDRAWAL OF BID**

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

## **ARTICLE 16 - OPENING OF BID**

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

## **ARTICLE 17 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

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

## **ARTICLE 18 - EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
  - A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- B. The Owner has the right to accept alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and alternates accepted.
  - C. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

#### **ARTICLE 19 - BONDS AND INSURANCE**

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

#### **ARTICLE 20 - SIGNING OF THE 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.

**END OF SECTION**

## SECTION 00 41 00

### BID FORM

#### ARTICLE 1 - OWNER & BIDDER

- 1.01 This Bid is submitted to: City of Northville  
215 W. Main Street  
Northville, MI 48167
- 1.02 Name of Project: 2023 Sidewalk Program
- 1.03 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 Project References;
  - C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
  - D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

#### ARTICLE 3 - BASIS OF BID

3.01 *Base Unit Price Bid*

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

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	General Conditions, Bonds, Insurance, and Mobilization	LSum	1	\$	\$
2	Curb and Gutter, Rem	Ft	200	\$	\$
3	Pavt, Rem, Modified	Syd	45	\$	\$
4	Sidewalk, Rem	Syd	200	\$	\$
5	Sidewalk, Conc, 4 inch, Modified	Sft	1025	\$	\$
6	Sidewalk, Conc, 6 inch, Modified	Sft	110	\$	\$
7	Curb Ramp, Conc, 6 inch, Modified	Sft	700	\$	\$

8	Curb Ramp Opening, Conc	Ft	200	\$	\$
9	Curb and Gutter, Conc, Match Ex.	Ft	50	\$	\$
10	Hand Patching	Ton	20	\$	\$
11	Construction Signing, Drums, Lighted Arrows, and Barricades	LSum	1	\$	\$
Total of All Base 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.

3.02 *Alternate Unit Price Bid:*

- A. Bid alternate pricing is requested for the construction of two egress sidewalks at the Allen Terrace Senior Living Development at 401 High Street in the City of Northville. The below additional work will be added to the contract upon housing department approval. The housing department reserves the right to remove or add this work whole or in part after the contract is awarded.

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
12	Tree, Rem, 6 to 18 inch	Ea	1	\$	\$
13	Sign, Rem	Ea	1	\$	\$
14	Curb and Gutter, Rem	Ft	50	\$	\$
15	Pavt, Rem, Modified	Syd	20	\$	\$
16	Sidewalk, Conc, 6 inch, Allen Terrace	Sft	600	\$	\$
17	Curb Ramp, Conc, 6 inch, Allen Terrace	Sft	250	\$	\$
18	Curb Ramp Opening, Conc, Modified	Ft	20	\$	\$
19	Dumpster Pad, Conc, 10 inch	Sft	125	\$	\$
20	Curb and Gutter, Conc, Det F4, Modified	Ft	10	\$	\$
21	Curb and Gutter, Conc, Det D2, Modified	Ft	20	\$	\$
22	6" x 6" x 1/4" Steel Tube Post, Including Footing	Ea	2	\$	\$



23	6-inch Diameter Steel Bollards, Including Footing	Ea	2	\$	\$
24	Swale, Grading	Ft	40	\$	\$
25	Restoration	Syd	200	\$	\$
Total of All Alternative 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.

#### **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 90 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

5.04 *Subcontractor and Supplier List:*

A. Bid is submitted on the basis of the use of the following Subcontractors

WORK ITEM	FIRM	CITY
Removals		
Concrete Work		
Traffic Control		
Restoration		

**ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS**

6.01 *Bidder's Representations*

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

6.02 Bidder's Certifications

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
  - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
  - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
  - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
  - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder: \_\_\_\_\_  
(typed or printed name of organization)

By: \_\_\_\_\_  
(individual's signature)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Date: \_\_\_\_\_  
(typed or printed)

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

Attest: \_\_\_\_\_  
(individual's signature)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Date: \_\_\_\_\_  
(typed or printed)

Address for giving notices:

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Bidder's Contact:

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

**END OF SECTION**

**SECTION 00 43 13**

**BID BOND**

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

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

**SECTION 00 51 00**

**NOTICE OF AWARD**  
*(on Engineer's Letterhead)*

Date of Issuance:

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name: *(Insert name of Contract as it appears in the Bidding Documents)*

Bidder:

Bidder's Address:

---

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

---

*(describe Work, alternates, or sections of Work awarded)*

The Contract Price of the awarded Contract is \$ \_\_\_\_\_. Contract Price 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 electronic counterpart of the Agreement accompanies this Notice of Award and an electronic copy of the Contract Documents will be made available upon request.

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

1. Deliver to Engineer:
  - One pdf formatted counterpart of the Agreement, signed by Bidder (as Contractor).
  - EJCDC *[or other as specified]* Contract Security (Bonds) as specified in the Instructions to Bidders, General Conditions, and Supplementary Conditions.
    - Do not date the bonds. The date will be entered on the bonds after the Agreement is signed by the Owner. This is necessary to ensure the date on the Bonds do not precede the date of the Agreement.
    - Fully dated Bonds will be delivered to the Contractor after the Contract Documents are fully executed.
  - Certificates of Insurance as specified in the General Conditions and Supplementary Conditions.
2. Other conditions precedent (if any): *[Describe other conditions that require Successful Bidder's compliance]*

Electronic signatures (e-signatures) and scanned copies of handwritten signatures are acceptable forms of signatures in the pdf documents.

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.

The information provided will be reviewed, bound into the Contract Documents, submitted to the Owner for signature, and distributed to the appropriate parties.

Sincerely,

*[Project Manager]*

Fleis & VandenBrink Engineering, Inc.

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

\_\_\_\_\_  
Title

cc: [Owner]

**END OF SECTION**



## **SECTION 00 52 00**

### **AGREEMENT**

This Agreement is by and between \_\_\_\_\_ (“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: Concrete sidewalk removal and placement.

#### **ARTICLE 2 - THE PROJECT**

- 2.01 Project, of which the Work under the Contract Documents is a part, is generally described as follows: 2023 Sidewalk Program.

#### **ARTICLE 3 - ENGINEER**

- 3.01 The Owner has retained Fleis & VandenBrink Engineering, Inc. (“Engineer”) for design engineering only.
- 3.02 The part of the Project that pertains to the Work has been designed by Engineer.

#### **ARTICLE 4 - CONTRACT TIMES**

##### **4.01 *Time of the Essence***

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

##### **4.02 Contract Times: Dates**

- A. The Work will be substantially complete on or before September 15, 2023, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 13, 2023.

##### **4.03 Liquidated Damages**

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the 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 \$450 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 \$450 for each day that expires after such time until the Work is completed and ready for final payment.
  3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

## **ARTICLE 5 - CONTRACT PRICE**

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract.
- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit totaling \$\_\_\_\_\_. Work *includes/does not include* Bid Alternate.

## **ARTICLE 6 - PAYMENT PROCEDURES**

### **6.01 Submittal and Processing of Payments**

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

### **6.02 Progress Payments; Retainage**

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment 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.

- 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 percent per annum rate 2.0% higher than the Prime Rate on the date of bid opening.

### **ARTICLE 7 - CONTRACT DOCUMENTS**

#### 7.01 *Contents*

- A. The Contract Documents consist of all of the following:
  - 1. This Agreement.
  - 2. Bonds
    - a. Performance bond (together with power of attorney).
    - b. Payment bond (together with power of attorney).
  - 3. General Conditions.
  - 4. Supplementary Conditions.
  - 5. Specifications as listed in the table of contents of the project manual.
  - 6. Addenda (numbers \_\_\_\_\_ to \_\_\_\_\_, inclusive).
  - 7. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid.
    - b. Documentation submitted by Contractor prior to Notice of Award.
    - c. \_\_\_\_\_.
  - 8. 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.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

## **ARTICLE 8 - REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS**

### **8.01 Contractor's Representations**

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
  2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
  4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, if any, with respect to the Technical Data in such reports and drawings.
  5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
  6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
  7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
  8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
  9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
  10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
  11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

### **8.02 Contractor's Certifications**

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

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution.
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

### 8.03 Standard General Conditions

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

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

This Agreement will be effective on \_\_\_\_\_, 20\_\_\_\_ (which is the Effective Date of the Contract).

Owner:

Contractor:

\_\_\_\_\_  
(typed or printed name of organization)

By: \_\_\_\_\_  
(individual's signature)

Date: \_\_\_\_\_  
(date signed)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

Attest: \_\_\_\_\_  
(individual's signature)

Title: \_\_\_\_\_  
(typed or printed)

Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(typed or printed name of organization)

By: \_\_\_\_\_  
(individual's signature)

Date: \_\_\_\_\_  
(date signed)

Name: \_\_\_\_\_  
(typed or printed)

Title: \_\_\_\_\_  
(typed or printed)

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

Attest: \_\_\_\_\_  
(individual's signature)

Title: \_\_\_\_\_  
(typed or printed)

Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Designated Representative:

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Designated Representative:

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

License No.: \_\_\_\_\_  
*(where applicable)*

State: \_\_\_\_\_

**END OF SECTION**

**SECTION 00 55 00**

**NOTICE TO PROCEED**  
(on ENGINEER's letterhead)

Dated \_\_\_\_\_

Owner: \_\_\_\_\_ Owner's Project No.: \_\_\_\_\_  
Engineer: \_\_\_\_\_ Engineer's Project No.: \_\_\_\_\_  
Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
Project: \_\_\_\_\_  
Contract Name: \_\_\_\_\_

OWNER's Contract No. \_\_\_\_\_ ENGINEER's Project No. \_\_\_\_\_

On behalf of [Owner], you are hereby notified 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: \*\*\*Note to user: select one of the two below paragraphs, fill in the blanks and modify to be consistent with the Contract Times section of the Agreement. \*\*\*

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

[or]

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

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

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

Sincerely,  
Fleis & VandenBrink Engineering, Inc.

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

cc: [Owner]

**END OF SECTION**

**SECTION 00 61 13**

**PERFORMANCE BOND**

<b>Contractor</b> Name: <b>[Full formal name of Contractor]</b> Address ( <i>principal place of business</i> ): <b>[Address of Contractor's principal place of business]</b>	<b>Surety</b> Name: <b>[Full formal name of Surety]</b> Address ( <i>principal place of business</i> ): <b>[Address of Surety's principal place of business]</b>
<b>Owner</b> Name: <b>[Full formal name of Owner]</b> Mailing address ( <i>principal place of business</i> ): <b>[Address of Owner's principal place of business]</b>	<b>Contract</b> Description ( <i>name and location</i> ): <b>[Owner's project/contract name, and location of the project]</b>  Contract Price: <b>[Amount from Contract]</b> Effective Date of Contract: <b>[Date from Contract]</b>
<b>Bond</b> Bond Amount: <b>[Amount]</b> Date of Bond: <b>[Date]</b> <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> 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
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	



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

whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
  - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
  - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
14. Definitions
  - 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
  - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
  - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

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

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

16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

# SECTION 00 61 14

## PAYMENT BOND

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

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

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

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

**SECTION 00 62 67**  
**PAYMENT APPLICATION FORM**

**PART 1 - GENERAL**

Not Used.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - SUMMARY**

3.01 SCHEDULES:

- A. Attached are the following forms:
  - 1. Pay Application Form; EDCDC No. C-620, 2018 Edition

**END OF SECTION**



## Contractor's Application for Payment

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

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

### Contractor's Certification

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

- (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
- (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
- (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor:	_____
Signature:	_____ Date: _____

### Recommended by Engineer

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

### Approved by Owner

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

### Approved by Funding Agency

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

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

<b>Progress Estimate - Unit Price</b>										<b>Contractor's Application for</b>	
<b>Owner:</b>									<b>Owner's Project</b>		
<b>Engineer:</b>									<b>Engineer's Project</b>		
<b>Contractor</b>									<b>Contractor's</b>		
<b>Project:</b>											
<b>Contract:</b>											
<b>Applicatio</b>		<b>Application</b>	<b>From</b>		<b>to</b>					<b>Application Date:</b>	
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>
<b>Bid Item</b>	<b>Description</b>	<b>Contract Information</b>				<b>Work Completed</b>		<b>Materials</b>	<b>Work</b>	<b>% of</b>	<b>Balance to</b>
		<b>Item</b>	<b>Units</b>	<b>Unit</b>	<b>Value of</b>	<b>Estimated</b>	<b>Value of</b>	<b>Currently</b>	<b>Complete</b>	<b>Valu</b>	<b>Finish (F -</b>
<b>Original Contract</b>											
<b>Original Contract Totals</b>					\$		\$	\$	\$		\$
<b>Change Orders</b>											
<b>Change Order Totals</b>					\$		\$	\$	\$		\$
<b>Original Contract and Change Orders</b>											
<b>Project Totals</b>					\$		\$	\$	\$		\$

**SECTION 00 72 00**

**GENERAL CONDITIONS**

***EJCDC NO. C-700 (2018 EDITION)***

***2 TITLE PAGES, TABLE OF CONTENTS PAGES 1 TO 5, AND PAGES 1 THROUGH 70***

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

## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to Owner.
  6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
  7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
  8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
  9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*
    - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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

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

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

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
  - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
  - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
  - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
  - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
  - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

## 1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - 1. does not conform to the Contract Documents;
  - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
  - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
  - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.



- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## **ARTICLE 2—PRELIMINARY MATTERS**

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

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

### **2.02 *Copies of Documents***

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

### **2.03 *Before Starting Construction***

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
  - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
  - 2. a preliminary Schedule of Submittals; and
  - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

## ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
  - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
  - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

### 3.02 *Reference Standards*

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

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

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

#### B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

### 3.04 *Requirements of the Contract Documents*

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

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
  - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
  - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

## **ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK**

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

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

### 4.02 *Starting the Work*

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

### 4.03 *Reference Points*

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

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

#### 4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
  - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

#### 4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  - 2. Abnormal weather conditions;
  - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
  - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
  2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
  3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
  2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
  3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
  4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
  5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

### **5.01 *Availability of Lands***

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

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

## 5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
  2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
  - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment



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

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

### 5.03 *Subsurface and Physical Conditions*

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

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

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

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

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

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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

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

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
  - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
  - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
    - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
    - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
    - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
  3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
  4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
  2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
  4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
  5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
  2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
  3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
  4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
  - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
  - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
  3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
  4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

#### 5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

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

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

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## **ARTICLE 6—BONDS AND INSURANCE**

### **6.01 *Performance, Payment, and Other Bonds***

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

#### 6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by



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

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
  - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
  - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

#### 6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
  - 1. include at least the specific coverages required;
  - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
  - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
  - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
  - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
  - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
  - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
  - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

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

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

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
  2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

**ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES**

7.01 *Contractor's Means and Methods of Construction*

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

7.02 *Supervision and Superintendence*

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

7.03 *Labor; Working Hours*

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

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

#### 7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
      - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
  - 3) has a proven record of performance and availability of responsive service; and
  - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
  - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

#### 7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
  2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
  - a. will certify that the proposed substitute item will:
    - 1) perform adequately the functions and achieve the results called for by the general design;
    - 2) be similar in substance to the item specified; and
    - 3) be suited to the same use as the item specified.
  - b. will state:
    - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
    - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
    - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
  - c. will identify:
    - 1) all variations of the proposed substitute item from the item specified; and
    - 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.



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

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

#### 7.09 *Permits*

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

#### 7.10 *Taxes*

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

#### 7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.12 *Record Documents*

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

### 7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 1. all persons on the Site or who may be affected by the Work;
  - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
  - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determine and verify:
    - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
    - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
    - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
  - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
    - a. Contractor shall submit the number of copies required in the Specifications.
    - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
  2. *Samples*
    - a. Contractor shall submit the number of Samples required in the Specifications.
    - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
  3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
  2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
  3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
  4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

*D. Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
  - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
  - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
  - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

**7.17 Contractor's General Warranty and Guarantee**

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
  - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
  - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
  - 1. Observations by Engineer;
  - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
  - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  - 4. Use or occupancy of the Work or any part thereof by Owner;
  - 5. Any review and approval of a Shop Drawing or Sample submittal;
  - 6. The issuance of a notice of acceptability by Engineer;
  - 7. The end of the correction period established in Paragraph 15.08;
  - 8. Any inspection, test, or approval by others; or



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

**7.18 Indemnification**

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

**7.19 Delegation of Professional Design Services**

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
  - 1. Checking for conformance with the requirements of this Paragraph 7.19;
  - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
  - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

## **ARTICLE 8—OTHER WORK AT THE SITE**

### **8.01 *Other Work***

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

#### 8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
  - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
  - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
  - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 8.03 *Legal Relationships*

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

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
  - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
  - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

## **ARTICLE 9—OWNER'S RESPONSIBILITIES**

### **9.01   *Communications to Contractor***

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

### **9.02   *Replacement of Engineer***

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

### **9.03   *Furnish Data***

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

### **9.04   *Pay When Due***

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

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

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

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

9.07 *Change Orders*

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

## ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

### 10.01 *Owner's Representative*

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

### 10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

### 10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

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

**10.05 *Determinations for Unit Price Work***

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

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

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

**10.07 *Limitations on Engineer's Authority and Responsibilities***

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

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

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

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

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

**10.08 *Compliance with Safety Program***

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

## ARTICLE 11—CHANGES TO THE CONTRACT

### 11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

### 11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
  - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
  - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

### 11.03 *Work Change Directives*

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



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

#### 11.04 *Field Orders*

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

#### 11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.06 *Unauthorized Changes in the Work*

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

#### 11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
  2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
  3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
  2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
    - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
    - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
    - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
    - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

#### 11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

#### 11.09 *Change Proposals*

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

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
  - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
  - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

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

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

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

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

#### 11.10 *Notification to Surety*

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

### ARTICLE 12—CLAIMS

#### 12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
  1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
  3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
  4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
  - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## **ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **13.01 *Cost of the Work***

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
  2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
  3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
  4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
  5. Other costs consisting of the following:
    - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
    - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
  - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
  - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
  - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
  - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
  - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
  - 6. Expenses incurred in preparing and advancing Claims.
  - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
    - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
    - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
      - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
      - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
  - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change



Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

#### 13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
  2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

#### 13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

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

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  3. by manufacturers of equipment furnished under the Contract Documents;
  4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
  - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
  - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

**14.07 Owner May Correct Defective Work**

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

**ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD**

**15.01 Progress Payments**

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
  - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
  - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

*C. Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work;
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
  - a. the Work is defective, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
  - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

**D. *Payment Becomes Due***

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

**E. *Reductions in Payment by Owner***

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. The Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. The Contract Price has been reduced by Change Orders;
  - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
  - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
  - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
  3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

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

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

#### 15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time



submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

#### 15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 15.06 *Final Payment*

##### A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

#### 15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

#### 15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such adjacent areas;
  - 2. correct such defective Work;
  - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

## **ARTICLE 16—SUSPENSION OF WORK AND TERMINATION**

### **16.01 *Owner May Suspend Work***

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

### **16.02 *Owner May Terminate for Cause***

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
  - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
  - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
  - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
  - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
  - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

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

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## **ARTICLE 17—FINAL RESOLUTION OF DISPUTES**

### **17.01 *Methods and Procedures***

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
  - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
  - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
  - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
  - 2. agree with the other party to submit the dispute to another dispute resolution process; or
  - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18—MISCELLANEOUS**

### **18.01 *Giving Notice***

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
  - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
  - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
  - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

### **18.02 *Computation of Times***

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

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

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

18.10 *Headings*

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



**SECTION 00 73 00**  
**SUPPLEMENTARY CONDITIONS**

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

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

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

**ARTICLE 1 – DEFINITIONS AND TERMINOLOGY**

**1.01**    *Defined Terms*

SC-1.01    Add the following new paragraph immediately after Paragraph 1.01.A.50:

- 51. Bulletin - A document outlining possible changes to the Contract Documents which is issued by Engineer on behalf of Owner requesting add or deduct costs from Contractor.

**ARTICLE 2 – PRELIMINARY MATTERS**

**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 one copy of conformed Contract Documents incorporating all addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement) in electronic portable document format (PDF). Printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

**2.06**    *Electronic Transmittals*

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

- B. Electronic Documents Protocol: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

- 1. Basic Requirements

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
  - c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
  - d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
  - e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
  - f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.
2. System Infrastructure for Electronic Document Exchange
- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
    - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
    - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
  - b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

C. Software Requirements for Electronic Document Exchange; Limitations

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

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for use.	Email w/ Attachment or LFE	DWG	
a.6	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format			
DWG	Autodesk® Civil 3D .dwg format Version 18			
EXC	Microsoft® Excel .xls or .xml format			

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

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

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be

subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:

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

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

No Supplementary Conditions in this Article.

### **ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

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

SC-4.01 Delete Paragraph 4.01.A in its entirety and insert the following:

- A. The Contract Times will commence to run on the date indicated in the Notice to Proceed.

#### 4.05 *Delays in Contractor's Progress*

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

##### 5. Weather-Related Delays

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered abnormal weather conditions. Requests for time extension due to abnormal weather conditions will be submitted to the Engineer within five days of the end of the abnormal weather condition event. It is the responsibility of the Contractor to provide the information listed in SC 4.05.C.5b.
- b. Should the Contractor wish to claim a delay due to adverse weather, it is the Contractor's responsibility to provide adequate documentation for the claim.

#### **ARTICLE 5 – SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS**

##### 5.03 Subsurface and Physical Conditions

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

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

Report Title	Date of Report	Technical Data
None	N/A	N/A

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

Drawings Title	Date of Drawings	Technical Data
None	N/A	N/A

## 5.06 Hazardous Environmental Conditions

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

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

Report Title	Date of Report	Technical Data
None	N/A	N/A

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

Drawings Title	Date of Drawings	Technical Data
None	N/A	N/A

## 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:

Required Performance Bond Form: The performance bond that Contractor furnishes will be in the form of EJCDC® C 610, Performance Bond (2018 edition).

Required Payment Bond Form: The payment bond that Contractor furnishes will be in the form of EJCDC® C 615, Payment Bond (2018 edition).

### 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, and pollution liability must include as additional insureds (in addition to Owner and Engineer) the following:

Waiver of subrogation shall apply to additional insured.

- E. *Workers' Compensation and Employer's Liability*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance (from available sources,

notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

<b>Workers' Compensation and Related Policies</b>	<b>Policy limits of not less than:</b>
<b>Workers' Compensation</b>	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
<b>Employer's Liability</b>	
Each accident	\$500,000
Each employee	\$500,000
Policy limit	\$500,000

- F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
  2. damages insured by reasonably available personal injury liability coverage, and
  3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
    - a. Such insurance must be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
  4. Underground, explosion, and collapse coverage.
  5. Personal injury coverage.
  6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.



7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

<b>Commercial General Liability</b>	<b>Policy limits of not less than:</b>
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

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

<b>Automobile Liability</b>	<b>Policy limits of not less than:</b>
Combined Single Limit (Bodily Injury & 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.

<b>Excess or Umbrella Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence	\$1,000,000
General Aggregate	\$1,000,000

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

<b>Contractor's Pollution Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$1,000,000

6.04 *Builders Risk and Other Property Insurance*

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

6.04 Not used.

6.07 *Owner's Protective Liability Insurance*

SC-6.07 Add the following new paragraph immediately after Paragraph 6.06:

- 6.07 CONTRACTOR shall purchase OWNER's Protective Liability Insurance written in the name of the OWNER in the amount of One Million Dollars (\$1,000,000), Each Occurrence Limit and \$2,000,000 Aggregate Limit. Entities and persons identified as additional insureds in SC 6.03.D, except OWNER, shall be named as additional insureds in OWNER's Protective Liability Insurance.

## **ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

7.03 *Labor; Working Hours*

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

- 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 shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with the Owner's written consent.
1. Regular working hours will be 7:00 a.m. through 7:00 p.m. Monday through Friday.
  2. Owner's legal holidays are:
    - a. January 1st.

- b. Memorial Day weekend from 5:00 p.m. the Friday before Memorial Day through 7:00 a.m. the Tuesday after Memorial Day.
  - c. July 4th holiday period from 5:00 p.m. Monday July 3rd, 2023 through 7:00 a.m. Wednesday July 5th, 2023.
  - d. Labor Day weekend from 5:00 p.m. the Friday before Labor Day through 7:00 a.m. the Tuesday after Labor Day.
  - e. Thanksgiving Day and the day after thanksgiving.
  - f. December 24th and 25th.
- 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 outside of regular working hours or during legal holidays. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, the Owner may impose a reasonable set-off against payments due under Article 15.

#### 7.13 Safety and Protection

SC-7.13 Add the following new paragraph immediately after Paragraph 7.13.J:

- K. Contractor shall indemnify, defend and hold harmless Owner and Engineer from any liability, loss, cost, penalty, damage or expense, including attorney's fees, arising from any claim, damage, proceeding, citation, or work stoppage in any way connected with Contractor's performance of the Work and violation of any requirement of public authority or applicable Laws and Regulations, including state and federal OSHA.

### ARTICLE 8 – OTHER WORK AT THE SITE

#### 8.02 Coordination

No Supplementary Conditions in this Article.

### ARTICLE 9 – OWNER'S RESPONSIBILITIES

#### 9.13 Owner's Site Representative

SC-9.13 Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:

#### 9.13 Owner's Site Representative

- A. Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner's Site Representative is not Engineer's consultant, agent, or employee.

## **ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION**

### **10.03** *Resident Project Representative*

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

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

## **ARTICLE 11 – CHANGES TO THE CONTRACT**

No Supplementary Conditions in this Article.

## **ARTICLE 12 – CLAIMS**

No Supplementary Conditions in this Article.

## **ARTICLE 13 – COST OF WORK; ALLOWANCES, UNIT PRICE WORK**

### **13.01** *Unit Price Work*

SC-13.01 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

#### **E.** Adjustments in Unit Price:

1. Owner reserves the right to add or delete work to the Contract using the unit prices bid. No adjustment in unit prices will be allowed.

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

No Supplementary Conditions in this Article.

## **ARTICLE 15 – PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD**

### **15.01** *Progress Payments*

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

1. 30 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.

## **ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION**

No Supplementary Conditions in this Article.

## ARTICLE 17 – FINAL RESOLUTIONS OF DISPUTES

### 17.01 *Methods and Procedures*

SC-17.01 Add the following new paragraphs immediately after Paragraph 17.01.

### 17.02 *Mediation*

- A. Before any claim, dispute or other matter between Owner and Contractor is submitted to arbitration or litigation, the Parties agree that they shall first negotiate in good faith utilizing the Chairperson of any Board or governing body and/or the President of the company in an effort to resolve the dispute(s). That negotiation shall take place within fifteen (15) days of notice of any dispute. The negotiation is a condition precedent to any continued dispute resolution proceedings. If the parties are unable to resolve the dispute through negotiation, within thirty (30) days thereafter, the parties shall mediate the matter before an experienced, professional mediator mutually agreeable to the parties. All offers, promises, conduct and statements, whether oral or written, made in the course of the negotiation by any of the Parties, their agents, employees, experts and attorneys shall be confidential, privileged and inadmissible for any purpose. Unless otherwise agreed, the mediation will occur at the location of the project and each party shall bear the costs of mediation equally. The mediation is a condition precedent to any continued dispute resolution proceedings. The mediation shall continue until an impasse is called by the appointed mediator. In the event that the attempt to resolve the matter through mediation fails then the matter may be submitted to arbitration.

### 17.03 *Arbitration*

- A. All matters subject to final resolution under this Article, and any related claims, shall be resolved 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, then within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers with fifteen (15) or more years of experience. 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. 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 and binding. 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 or to the extent disclosure is necessary to enforce the award by attaching a true copy to pleadings. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

## **ARTICLE 18 – MISCELLANEOUS**

No Supplementary Conditions in this Article.

### **END OF SECTION**

**SECTION 00 91 13**

**ADDENDUM**

Addendum No. \_\_\_\_\_

Owner: \_\_\_\_\_  
Contract: \_\_\_\_\_  
Project: \_\_\_\_\_ Date: \_\_\_\_\_  
Owner's Contract \_\_\_\_\_ Engineer's Project No.: \_\_\_\_\_  
No.: \_\_\_\_\_  
ENGINEER: \_\_\_\_\_

**NOTICE TO ALL PROSPECTIVE BIDDERS**

BIDS DUE: \_\_\_\_\_ -- ISSUED TO ALL PLANHOLDERS OF RECORD

=====

This Addendum is a part of the Contract Documents and modifies the previously issued Bidding Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may result in rejection of the Bid.

**SPECIFICATION CHANGES**

ITEM NO. 1:

Section \_\_\_\_\_ [Title] \_\_\_\_\_  
[Paragraph] \_\_\_\_\_  
\_\_\_\_\_  
[Paragraph] \_\_\_\_\_  
\_\_\_\_\_

ITEM NO. 2:

Section \_\_\_\_\_ [Title] \_\_\_\_\_  
[Paragraph] \_\_\_\_\_  
\_\_\_\_\_

**DRAWING CHANGES**

ITEM NO. 3:

Sheet(s) \_\_\_\_\_:  
\_\_\_\_\_  
\_\_\_\_\_

ITEM NO. 4:

Sheet(s) \_\_\_\_\_:  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENTS:

**END OF SECTION**

**SECTION 01 11 00**  
**SUMMARY OF WORK**

**PART 1 - GENERAL**

**1.01 SUMMARY OF WORK:**

**A. The Work consists of the following:**

Removal and replacement of concrete sidewalk and curb ramps throughout the City, including restoration. An alternate bid is included in this project to construct egress sidewalk from the Allen Terrace Center, 401 High Street, in the City of Northville.

**B. Major work items include, but are not limited to, sidewalk removal, concrete sidewalk, curb ramps, curb ramp openings, and restoration.**

**1.02 CONSTRUCTION LIMITATIONS:**

**A. Access to homes and businesses must be maintained during construction.**

**B. Traffic control devices must be used to protect the work areas from pedestrian and vehicular traffic.**

**C. A notice to residents and business owners will be provided by the City to mark existing sprinkler/irrigation systems. Systems properly marked by the owners shall be protected and/or repaired as necessary by the Contractor at not additional cost to the project. Repairs and adjustment of systems not properly marked will be the responsibility of the property owner.**

**1.03 ADDITIONAL REQUIREMENTS:**

**A. Contractor shall provide QA/QC testing by a certified independent third-party testing firm in accordance with Section 01 45 00. Testing costs shall be included in contract pay items.**

**B. Construction staking will not be provided for this project.**

**END OF SECTION**



## SECTION 01 22 00

### MEASUREMENT AND PAYMENT

#### PART 1 - GENERAL

##### 1.01 SUMMARY:

This Section includes, but is not necessarily limited to, descriptions of the method of measurement and basis of payment criteria applicable to the Work.

##### 1.02 MEASUREMENT OF QUANTITIES:

- A. Measurement devices:
  - 1. Weigh scales:
    - a. Inspected, tested and certified.
  - 2. Platform scales:
    - a. Of enough size and capacity to accommodate the conveying vehicle.
  - 3. Metering devices:
    - a. Inspected, tested and certified.
- B. Measurement by weight:
  - 1. Concrete reinforcing steel rolled or formed steel or other metal shapes will be measured by handbook weights.
  - 2. Welded assemblies will be measured by handbook weights.
- C. Measurement by volume:
  - 1. Measured by cubic dimension using mean length, width and height or thickness.
- D. Measurement by area:
  - 1. Measured by square dimension using mean length and width or radius.
- E. Linear measurement:
  - 1. Measured by linear dimension, at the item centerline.

##### 1.03 MEASUREMENT AND PAYMENT SCHEDULE:

The following schedule outlines the method of measurement and basis of payment to be used on the project. Requirements for materials and methods described under each item are included in the related specification SECTION.

##### *BASE BID ITEMS:*

- Item 1. General Conditions, Bonds, Insurance and Mobilization: Shall be paid for on a lump sum basis for the CONTRACTOR's costs to provide required bonds and insurances, mobilization and miscellaneous requirements stipulated in Section 00 72 00 – GENERAL CONDITIONS. This quantity shall not exceed 10% of the total Base Unit Price Bid amount. Fifty percent (50%) will be paid on the first Application for Payment and twenty five percent (25%) will be paid on the second and third Applications for Payment.

- Item 2. Curb and Gutter, Rem: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction.
- Item 3. Pavt, Rem, Modified: Measured and paid for by the unit area for the full depth removal and saw cutting of existing pavements, regardless of type or thickness or material.
- Item 4. Sidewalk, Rem: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction.
- Item 5. Sidewalk, Conc, 4 inch, Modified: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include all grass restoration on both sides of the sidewalk regardless of width of disturbed area, which will include top soil and seeding per SP 32 92 00.
- Item 6. Sidewalk, Conc, 6 inch, Modified: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include all grass restoration on both sides of the sidewalk regardless of width of disturbed area, which will include top soil and seeding per SP 32 92 00.
- Item 7. Curb Ramp Conc, 6 inch, Modified: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction and the requirements of SP 32 13 14. This pay item will also include the Detectable Warning Surface and all grass restoration on both sides of the sidewalk regardless of width of disturbed area, which will include top soil and seeding per SP32 92 00.
- Item 8. Curb Ramp Opening, Conc: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction.
- Item 9. Curb and Gutter, Conc, Match Ex: Measured and paid by the unit length as measured along edge of metal including expansion materials and reinforcing bars. This item Includes all shapes and sizes of curb & gutter to match existing. This is an as-directed pay to be used in Downtown Location C should the City decide to eliminate one of the two crossings shown.
- Item 10. Hand Patching: Measured and paid by the unit weight by tallying load tickets for placed and compacted HMA. Submit load tickets to Engineer at time of HMA delivery. Report all weigh-backs to the Engineer promptly following the paving operation. This is an as-needed pay item to be used along the face of new curb ramp openings. Depth shall match existing HMA thickness or depth of removed road section.
- Item 11. Construction Signing, Drums, Lighted Arrows, and Barricades: Lump sum complete, furnished, installed, maintained, moved and removed, including minor traffic devices, drums, lighted arrows, barricades, temporary construction signs, traffic regulator control, and related work per the MDOT 2020 Standard Specifications for Construction required to maintain or detour traffic and to protect the work area in accordance with MDOT typicals and the *MDOT Michigan Manual of Uniform Traffic Control Devices*

and to re-open the road to traffic. Payment of sixty percent (60%) will be made upon setup and ten percent (10%) will be paid each month thereafter until one hundred percent (100%) has been paid.

*ALTERNATE BID ITEMS:*

- Item 12. Tree, Rem, 6 to 18 inch: Measured and paid for individually per the requirements of the MDOT 2020 Standard Specifications for Construction.
- Item 13. Sign, Rem: Measured and paid for individually. This pay item includes the removal of all footings, ties, etc. The sign should be salvaged and returned by the contractor to the following address:  
  
Northville DPW Yard  
650 Doheny Drive  
Northville, MI 48167.
- Item 14. Curb and Gutter, Rem: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction.
- Item 15. Pavt, Rem, Modified: Measured and paid for by the unit area for the full depth removal and saw cutting of existing pavements, regardless of type or thickness or material.
- Item 16. Sidewalk, Conc, 6 inch, Allen Terrace: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include the 4-inches of compacted 21AA limestone base and all fine grading necessary to place the base and sidewalk.
- Item 17. Curb Ramp, Conc, 6 inch, Allen Terrace: Measured and paid for by the unit area per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include the Detectable Warning Surface, 4-inches of compacted 21AA limestone base, and all fine grading necessary to place the base and curb ramp.
- Item 18. Curb Ramp Opening, Conc, Modified: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include 4-inches of compacted 21AA limestone base.
- Item 19. Dumpster Pad, Conc, 10 inch: Measured and paid for by the unit area. This pay item will also include 9-inches of compacted 21AA limestone base.
- Item 20. Curb and Gutter, Conc, Det F4, Modified: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include 4-inches of compacted 21AA limestone base.
- Item 21. Curb and Gutter, Conc, Det D2, Modified: Measured and paid for by the unit length per the requirements of the MDOT 2020 Standard Specifications for Construction. This pay item will also include 4-inches of compacted 21AA limestone base.

- Item 22. 6" x 6" x 1/4" Steel Tube Post, Including Footing: Measured and paid for individually. This pay item will include the construction of steel poles as shown on the dumpster enclosure detail including the 14-inch diameter and 31 1/2" deep footing for each post. This pay item will include all excavation and materials necessary to construct the footing and the post per the detail.
- Item 23. 6-inch Diameter Steel Bollards, Including Footing: Measured and paid for individually including the 18-inch diameter by 44-inch deep footing for each bollard. This pay item will include all excavation and materials necessary to construct the footing and the post per the detail.
- Item 24. Swale, Grading: Measured and paid for by the unit length along the centerline of the swale. This pay item includes the grading necessary to redirect the existing downspouts into a swale to direct storm water runoff away from the proposed sidewalk. This item includes excavation, rough grading, shaping, fine grading, and disposal of excess material.
- Item 25. Restoration: Measured and paid by the unit area including grading, topsoiling, seeding, fertilizer nutrient, mulching, mulch anchoring, watering, weed control, maintenance and repair of turf. Locations where material was stockpiled by the contractor will be restored at the Contractor's expense. Upon completion of the initial topsoil surfacing, seeding, fertilizing and mulching stage 50 percent of the authorized amount for Restoration will be paid to the Contractor. The remaining authorized amount will be paid upon final acceptance of the established turf.

Other:

- **Quality Assurance/Quality Control (QA/QC) Testing: Performed by approved independent third-party testing firm and included in the cost of project. QA/QC testing shall be arranged, scheduled, coordinated, and paid for by the Contractor**
- Sawcutting existing bituminous or concrete pavement:
  - Included in removal items.
- Restoration
  - Included in Base Bid Items.
  - Paid for separately in Alternate Bid (Allen Terrace)
- Sprinkler/Irrigation Systems
  - Repairs include in contract items. Property owners will be contacted by City to mark location of sprinklers.

## PRODUCTS

Not Used.

## EXECUTION

Not Used.

## END OF SECTION

## **SECTION 01 23 00**

### **ALTERNATES**

#### **PART 1 - GENERAL**

##### **1.01 SECTION INCLUDES:**

- A. Administrative and procedural requirements for Alternates.

##### **1.02 SEQUENCING AND SCHEDULING:**

- A. Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
- B. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.
  - 1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

#### **PART 2 - PRODUCTS**

Not used.

#### **PART 3 - EXECUTION**

##### **3.01 SCHEDULE OF ALTERNATES:**

- A. Alternate Bid

Alternate bids are requested for the construction of two egress sidewalks at the Allen Terrace Senior Living Development at 401 High Street in the City of Northville. This additional work will be added to the contract upon housing department approval. The housing department reserves the right to remove or add this work whole or in part after the contract is awarded.

**END OF SECTION**

## **SECTION 01 26 00**

### **CONTRACT MODIFICATION PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY:**

- A. This Section includes, but is not necessarily limited to, the forms and procedures for modifying the Contract Documents.

#### **PART 2 - PRODUCTS**

Not used.

#### **PART 3 - EXECUTION**

##### **3.01 SCHEDULES:**

- A. Attached are the following forms:
  - 1. Bulletin.
  - 2. Field Order.
  - 3. Change Order.

**END OF SECTION**

**BULLETIN**  
*Page 1 of 2*

CONTRACT FOR:

BULLETIN NO. \_\_\_\_\_

OWNER:

DATE: \_\_\_\_\_

DUE DATE: \_\_\_\_\_

CONTRACTOR:

ENGINEER:

DRAWING REVISION NO.: \_\_\_\_\_

DRAWING SHEETS ISSUED HERewith: \_\_\_\_\_

DISTRIBUTION: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

=====

The items below are being considered as possible changes to the Contract Documents for this Project. CONTRACTOR is requested to submit changes in cost, if any, for each item and indicate whether it is an addition to or deduction from the Contract Price. Include all labor, materials, overhead and profit. After reviewing the effects of those changes in the Work, OWNER may issue a Change Order specifying which changes are to be incorporated in the Work, if any.

This Bulletin is not a Change Order and is not to be deemed authorization to proceed with the changes listed.

Additional work or materials, where proposed, shall meet the requirements of the Contract Documents, except where noted.

CONTRACTOR will be responsible for notifying ENGINEER, in writing, concerning any revision or clarification which causes a change in the Contract Documents, but are not specifically mentioned as a cost item in this Bulletin.

CONTRACTOR shall return three (3) completed and signed copies of the Bulletin to ENGINEER on or before the due date noted above.

Each proposed change has been described briefly with additional information provided concerning detailed changes required for the major trades concerned. Only one total cost figure has been requested for each item on the Bulletin; however, a complete breakdown is required for each item as supporting documentation. This will allow OWNER to more easily evaluate the proposed cost changes. Each Bulletin item is an all-inclusive item and may concern work from several trades or Subcontractors. It is CONTRACTOR's responsibility to ensure that all work for each item has been included in the total cost figure provided to OWNER.

**BULLETIN**  
*Page 2 of 2*

BULLETIN NO. \_\_\_\_\_

DATE: \_\_\_\_\_

**SPECIFICATION CHANGES**

Item No. 1:

Section \_\_\_\_\_ - \_\_\_\_\_

[Paragraph] \_\_\_\_\_  
\_\_\_\_\_ Add/Deduct \$ \_\_\_\_\_

Item No. 2:

Section \_\_\_\_\_ - \_\_\_\_\_

[Paragraph] \_\_\_\_\_  
\_\_\_\_\_ Add/Deduct \$ \_\_\_\_\_

**DRAWING CHANGES**

Item No. 3:

Sheet(s) \_\_\_\_\_:

\_\_\_\_\_  
\_\_\_\_\_ Add/Deduct \$ \_\_\_\_\_

Item No. 4:

Sheet(s) \_\_\_\_\_:

\_\_\_\_\_  
\_\_\_\_\_ Add/Deduct \$ \_\_\_\_\_

**CONTRACTOR:**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title of Signatory

\_\_\_\_\_  
Date



**FIELD ORDER NO.: [Number of Field Order]**

Owner:  
Engineer:  
Contractor:  
Project:  
Contract Name:

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

Date Issued:

Effective Date of Field  
Order:

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

**Reference:**

Specification Section(s):

Drawing(s) / Details (s):

**Description:**

**[Description of the change to the Work]**

**Attachments:**

**[List documents supporting change]**

**Issued by Engineer**

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

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

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

**CHANGE ORDER NO.: [Number of Change Order]**

Owner: \_\_\_\_\_ Owner's Project No.: \_\_\_\_\_  
Engineer: \_\_\_\_\_ Engineer's Project No.: \_\_\_\_\_  
Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
Project: \_\_\_\_\_  
Contract Name: \_\_\_\_\_  
Date Issued: \_\_\_\_\_ Effective Date of Change Order: \_\_\_\_\_  
The Contract is modified as follows upon execution of this Change Order:

Description:  
**[Description of the change]**

Attachments:  
**[List documents related to the change]**

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

Recommended by Engineer (if required)

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

Authorized by Owner

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

Authorized by Contractor

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Approved by Funding Agency (if applicable)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SECTION 01 31 19**  
**PROJECT MEETINGS**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED:**

- A. The Engineer will schedule and administer the preconstruction conference and periodic progress meetings.
  - 1. Prepare the agenda for the meetings.
  - 2. Distribute written notice of each meeting in advance of meeting date.
  - 3. Make physical arrangements for meeting.
  - 4. Preside at meetings.
  - 5. Record the minutes.
  - 6. Distribute copies of the minutes to meeting attendees and affected parties.
- B. Representatives of Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

**1.02 PRECONSTRUCTION CONFERENCE:**

- A. Schedule: Meeting will be prior to the start of work at a time and place designated by the Engineer.
- B. Attendance:
  - 1. Owner.
  - 2. Engineer.
  - 3. Contractor.
  - 4. Major Subcontractors.
  - 5. Utility companies.
  - 6. Governmental agencies.
  - 7. Contractor's Safety representative.
- C. Agenda:
  - 1. Utility conflicts.
  - 2. Responsibilities
  - 3. General contract terms.
  - 4. Supervision.
  - 5. Schedules and seasonal limitations.
  - 6. Approvals and testing.
  - 7. Clearances and notices.
  - 8. Construction procedures.
  - 9. Payments and estimates.
  - 10. Labor requirements.
  - 11. Safety.

**1.03 PROGRESS MEETINGS:**

- A. Schedule: Meetings will be scheduled a minimum of once each month at a time and place designated by the Engineer.

B. Attendance:

1. Engineer.
2. Contractor.
3. Subcontractors as pertinent to agenda.
4. Government agencies as pertinent to agenda.
5. Safety representatives.

C. Agenda:

1. Review and approve minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction schedule.
5. Review of off-site fabrication and delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to construction schedule.
8. Proposed work during the succeeding work period.
9. Coordination of schedules.
10. Review of submittal schedules.
11. Review of proposed changes for effect on construction schedule and on completion date.
12. Safety report.
13. Review new business.
14. Establish date for next meeting.

**END OF SECTION**

## **SECTION 01 33 00**

### **SUBMITTALS**

#### **PART 1 - GENERAL**

##### **1.01 CONSTRUCTION SCHEDULES:**

###### **A. General:**

1. Coordinate with work by others as explained in SECTION 00 72 00 GENERAL CONDITIONS.
2. Contractor shall notify Engineer 72 hours prior to start of the work or prior to a major increase in the work force if these vary from schedule as submitted.

###### **B. Form of Schedules:**

1. Prepare schedules in the form of a horizontal bar chart.
2. Provide a separate horizontal bar for each trade or operation.
3. Provide a horizontal time scale identifying the first workday of each week.
4. The order shall be the chronological beginning of each work item.
5. The row identification shall be each major specification section or subdivision of work with distinct graphic delineation.

###### **C. Content of Schedules:**

1. The construction project schedule shall include as a minimum:
  - a. Project start date.
  - b. Start dates and durations for each major trade group, work tasks or other subdivisions of the work.
  - c. Shop drawings, product data, and sample submittal dates and dates when reviewed copies will be required.
  - d. Equipment and/or material delivery dates, if approved.
  - e. Total project duration and end dates.

###### **D. Updating:**

1. Show all occurring changes of previous submission.
2. Show progress completion dates of each activity.
3. Submit a narrative report, if required by Engineer defining:
  - a. Problem areas: Impact of current and anticipated delay factors.
  - b. Schedule changes: Effect on other contractors.
  - c. Revision description: Effect of change of scope and duration of activities.

###### **E. Submittal of Schedules:**

1. The Contractor shall submit the preliminary detailed construction schedule within fifteen (15) days after notice of award. Engineer will return copy within ten (10) days.
2. An updated schedule shall be submitted on the first workday of each month.

###### **F. Distribution:**

1. The reviewed schedule shall be distributed by Engineer to:
  - a. The job site file.
  - b. Owner.

## 1.02 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

### A. General:

1. Where required by specifications, the Contractor shall submit descriptive information which will enable the Engineer to advise the Owner whether the Contractor's proposed materials, equipment, or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications.

### B. Contractor Responsibility:

1. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that the material and equipment described in each submittal conform to the requirements of the specifications and drawings. If the information shows deviations from the specifications or drawings, the Contractor shall insure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work of another Contractor or the Owner. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.
2. The Contractor shall be responsible to check and verify all field measurements, all dimensions on shop and setting drawings and all schedules required for the work of all the various trades.
3. Where content of submitted literature includes data not pertinent to the submittal, Contractor shall clearly indicate which portion of the contents is being submitted for Engineer's review.
4. The Contractor shall stamp each submittal with stamp, initialed and signed, certifying to review of the submittal by the Contractor, verification of field measurements and compliance with Contract Documents.

### C. Transmittal Procedure:

1. General:
  - a. Submittals shall be submitted promptly in accordance with dates in proposals, approved schedules and in such sequence that there is no delay in the Work or the work of any other Contractor.
  - b. A unique number, sequentially arranged, shall be noted on the transmittal form accompanying each item's submittal. Original submittal numbers shall have the following format "XXX-Y" where "XXX" is the originally assigned submittal number, and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> resubmittals, respectively. Submittal 25-B, for example, is the second resubmittal of submittal 25.
2. Deviation from Contract:
  - a. If the Contractor proposed to provide material or equipment which does not conform to the specifications and drawings, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies. He shall prepare his reason for a change, including cost differential, and request a change order to cover the deviations.
3. Submittal Completeness:
  - a. Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

D. Review Procedure:

1. Submit in PDF (portable document format) electronic format. Hardcopy submittals may be made with prior approval of the Engineer. For samples, submit the number stated in each specifications section.
2. Unless otherwise specified, within fourteen (14) calendar days after receipt of the submittal, the Engineer shall review and return the submittal to the Contractor. The returned submittal shall indicate one of the following actions:
  - a. If the review indicates that the material, equipment or work method is in general conformance with the design concept, drawings and specifications, submittal copies will be marked "Reviewed, No Exceptions Taken". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
  - b. If the review indicates limited corrections are required, submitted copies will be marked "Reviewed, with Corrections Noted". The Contractor may begin implementing the work method by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.
  - c. If the review reveals that the submittal is insufficient or contains incorrect data, submitted copies will be marked "Rejected, Resubmit". Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted, and returned marked either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".
  - d. If the review indicates that the material, equipment, or work method is not in general conformance with the drawings and specifications, copies of the submittal will be marked "Rejected, Resubmit". Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned marked either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".
  - e. If the review indicates that the material or equipment is not from an acceptable manufacturer, as indicated in the specifications, copies of the submittal will be marked "Submit Specific Item". Except at his own risk, the Contractor shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned mark either "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted".

E. Effect of Review of Contractor's Submittal:

1. Review of drawings, methods of work or information regarding materials or equipment the Contractor proposes to provide shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liabilities by the Engineer or the Owner, or by an officer or employee thereof, and the Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material or equipment so reviewed. A mark of "Reviewed, No Exceptions Taken" or "Reviewed, with Corrections Noted" shall mean that the Owner has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

F. Re-review Costs:

1. Should Engineer be required to review a submittal more than twice because of failure of the submittal to meet the requirements of the Contract Documents, Engineer will record Engineer's time and expenses for performing all additional reviews. The Owner will compensate Engineer for these additional services and deduct the amount from payments to the Contractor.

1.03 OPERATION AND MAINTENANCE DATA:

A. Requirements:

1. Compile product data on related information appropriate for Owner's operation and maintenance of products furnished.
2. Prepare data in the form of an instructional manual for use by Owner's personnel. Prepare five (5) printed copies of complete sets compiled, bound and indexed. Also provide electronic copy on CD, if available.
3. Submittal of operation and maintenance manuals shall be prior to final payment request.

B. Required Submittals:

1. Refer to technical specification sections for required submittals.

1.04 RECORD DOCUMENTS:

A. Requirements:

1. The Contractor shall maintain on the construction site a minimum of one (1) complete set of Contract Documents amended by "RED LINE" or highlight inclusion to reflect the most immediate status methods, materials and locations and routings of construction. Supplementary sketches shall be included, if necessary, to clearly indicate all work as constructed.
2. At conclusion of work, the Contractor shall submit to the Engineer one (1) complete amended record set of these site documents.
3. Submittal shall be prior to final payment.
4. Failure of the Contractor to maintain an up-to-date set of modified drawings on the project site shall be reason to withhold payments.

1.05 ATTACHMENTS:

A. Shop Drawing List

**END OF SECTION**



## Shop Drawing Submittal List & Log

City of Northville  
2023 sidewalk Program  
F&V Project No.:

858251

Last Update: 3/29/2023

**Contractor shall submit the below Shop Drawings.**

Submittal No:	Specification Number	Specification Title	Description
	01 33 00	Submittals	Construction Schedule
	32 12 16	Hot Mixed Asphalt Paving - Marshall Mixtures	Job-Mix Formulas
	32 13 14	Concrete Sidewalk and Sidewalk Ramps	Concrete Mix Designs
	32 13 14	Concrete Sidewalk and Sidewalk Ramps	Material Certifications
	32 13 14	Concrete Sidewalk and Sidewalk Ramps	Batch Tickets
	32 13 14	Concrete Sidewalk and Sidewalk Ramps	Concrete Test Specimens
	32 16 13	Concrete Curbs and Gutters	Concrete Mix Designs
	32 16 13	Concrete Curbs and Gutters	Material Certifications
	32 16 13	Concrete Curbs and Gutters	Batch Tickets
	32 16 13	Concrete Curbs and Gutters	Concrete Test Specimens
	32 92 00	Surface Protection and Restoration	Seed mixture
	32 92 00	Surface Protection and Restoration	Fertilizer product
	32 92 00	Surface Protection and Restoration	Herbicide product and application method

## **SECTION 01 42 13**

### **ABBREVIATIONS**

#### **PART 1 - GENERAL**

##### **1.01 ABBREVIATIONS:**

###### **A. Standards:**

AASHTO:	American Association of State Highway Transportation Officials
ACI:	American Concrete Institute
ANSI:	American National Standard Institute
ASA:	American Standard Association
ASTM:	American Society for Testing and Materials
AWS:	American Welding Society
AWWA:	American Water Works Association
CRSI:	Concrete Reinforcing Steel Institute
CSI:	Construction Specifications Institute
EGLE:	Michigan Department of Environment, Great Lakes, and Energy
IDEM:	Indiana Department of Environmental Management
MDPH:	Michigan Department of Public Health
MDNR:	Michigan Department of Natural Resources
MDOT:	Michigan Department of Transportation
NEC:	National Electrical Code
NCPI:	National Clay Pipe Institute
UL:	Underwriters Laboratories Inc.
AISC:	American Institute of Steel Construction
NEMA:	National Electrical Manufacturers Association
NFPA:	National Fire Protection Association

###### **B. Unit Priced Items:**

LFt, Lft:	Linear Foot
Ea:	Each
VFt, Vft.:	Vertical Foot
LSum, Lsum:	Lump Sum
Syd, Syd:	Square Yard
Sta:	Station (100 foot)
Cyd, Cyd:	Cubic Yard
SFt, Sft, SqFt:	Square Foot
LB, Lb:	Pound
GAL, Gal:	Gallon

**END OF SECTION**

## SECTION 01 45 00

### QUALITY CONTROL

#### PART 1 - GENERAL

##### 1.01 SUMMARY:

- A. This Section includes the work required for all quality control.
- B. CONTRACTOR shall complete QA/QC testing through a certified independent third-party testing firm.

##### 1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction"*.
- B. ASTM - American Society of Testing Materials, latest edition.
- C. AASHTO – American Association of State Highway Transportation Officials, latest edition.
- D. AWS – American Welding Society, latest edition.

##### 1.03 QUALITY ASSURANCE:

- A. General:
  - 1. Selection of test specimens will be made by the ENGINEER.
  - 2. Testing procedure will be in accordance with the current standard specified.
  - 3. Refer to the SECTION requirements for field quality control.

##### 1.04 SUBMITTALS:

- A. Test Specimens: Deliver to the place of inspection and testing.
- B. Certification of Quality by Producer: Deliver to the ENGINEER.
- C. Certification of Welders: Deliver to the ENGINEER.

##### 1.05 DELIVERY:

- A. Collect and deliver materials and concrete cylinders to the designated testing laboratory.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS:

- A. Inspection and Testing Agencies:
  - 1. In accordance with the requirements of ASTM E329.
  - 2. Reporting shall be to the ENGINEER.

### **PART 3 - EXECUTION**

#### **3.01 PERFORMANCE:**

##### **A. Acceptance Tests and Inspection:**

1. Aggregates: Certification of quality by producer.
2. Soil density:
  - a. Moisture-density relationships:
    - 1) Cohesive (Clays) or Granular (Sands) Soils: ASTM D1557 (Modified Proctor).
    - 2) Granular (Sands) Soils: Michigan Cone Test.
  - b. Field density determination according to ASTM standards.
  - c. CONTRACTOR shall provide access to test location and depth.
3. Asphalt cement: Certification of quality producer.
4. Bituminous mix composition:
  - a. Sample: ASTM D979.B.
  - b. Extraction test: AASHTO T30, AASHTO T168 AND ASTM D2172.
  - c. Frequency: One test within each 500-ton placed.
5. Bituminous pavement density:
  - a. Sample: ASTM D979
  - b. Comparative density tests of in-place material against laboratory specimens of the same material: ASTM D1559 and ASTM D2726.
  - c. Frequency: One test within each 2,500 square yards placed.
6. Brick and Block:
  - a. Manholes and catch basins: Visual inspection on-site
7. Cement: Certification of quality by producer.
8. Concrete:
  - a. Sample: ASTM C172
  - b. Frequency: Once for each 50 cubic yards of each class of concrete placed.
  - c. Perform following from sample:
    - (1) Mold three 6-inch cylinder compressive strength specimens: ASTM: C31
    - (2) Slump test: ASTM C143
    - (3) Air test: ASTM C231
    - (4) Yield test: ASTM C138
    - (5) Strength test: ASTM C139
9. Precast Manholes: Certification of quality by producer.
10. Pipe:
  - a. Laboratory test one-half percent (½%) of total item with minimum one piece each size, material and class. Certification of quality by producer acceptable for corrugated metal pipe.
11. Steel (reinforcing, structural and miscellaneous): Certification of quality by producer.

**END OF SECTION**

## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 – GENERAL

##### 1.01. SUMMARY:

- A. Section includes:
  - 1. This Section includes, but is not necessarily limited to, the furnishing, fabrication and installation of the major items listed below as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.
- B. Temporary Construction Facilities:
  - 1. Vehicular access.
  - 2. Parking.
  - 3. Progress cleaning and waste removal.
  - 4. Traffic regulation.
- C. Temporary Controls:
  - 1. Barriers.
  - 2. Water control.
  - 3. Dust control.
- D. Removal of Temporary Utilities, Facilities and Controls.

##### 1.02 VEHICULAR ACCESS:

- A. Provide unimpeded access for emergency vehicles.
- B. Provide and maintain access to fire hydrants and control valves free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.

##### 1.03 PARKING:

- A. Provide temporary parking areas to accommodate construction personnel.
- B. Use of existing parking facilities by construction personnel is not permitted.
- C. Do not allow heavy vehicles or construction equipment to park on paved surfaces to remain as part of this project.
- D. Permanent Pavements and Parking Facilities:
  - 1. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
  - 2. Use of permanent parking structures is not permitted.
- E. Maintenance:
  - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

2. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water and other deficiencies, to maintain paving and drainage in original or specified condition.

F. Removal, Repair:

1. Remove temporary materials and construction at Substantial Completion.
2. Remove underground work and compacted materials to depth of 2 feet; fill and grade site as specified.
3. Repair existing facilities damaged by use to original or better condition.

1.04 PROGRESS CLEANING AND WASTE REMOVAL:

- A. Maintain areas free of waste materials, debris and rubbish. Maintain site in clean and orderly condition.
- B. Collect and remove waste materials, debris and rubbish from site frequently and dispose off site.

1.05 TRAFFIC REGULATION:

A. Signs, Signals and Devices:

1. Post Mounted Traffic Control and Informational Signs: As approved by authority having jurisdiction.
2. Traffic Cones and Drums: As approved by authority having jurisdiction.
3. Flag person Equipment: As required by authority having jurisdiction.

- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Haul Routes:

1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.

D. Traffic Signs and Signals:

1. Provide signs at approaches to site and on site, at crossroads, detours, parking areas and elsewhere as needed to direct construction and affected public traffic.
2. Provide, operate and maintain [automatic] traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
3. Relocate as Work progresses to maintain effective traffic control.

E. Removal:

1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation
3. Remove post settings to depth of 2 feet.

1.06 BARRIERS:

- A. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.07 WATER CONTROL:

- A. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment.

1.08 DUST CONTROL:

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide Positive means to prevent air-borne dust from dispersing into atmosphere.

1.09 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS:

- A. Remove any temporary utilities, equipment, facilities and materials prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original or better condition.

**PART 2 – PRODUCTS – Not Used**

**PART 3 – EXECUTION – Not Used**

**END OF SECTION**

## **SECTION 01 57 13**

### **TEMPORARY EROSION AND SEDIMENTATION CONTROL**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY:**

- A. This Section includes the work required to provide and maintain temporary soil erosion and sedimentation control.

##### **1.02 JOB CONDITIONS:**

- A. Requirements: Comply with Drawings and permit requirements.
- B. Permit: Obtain permit from local enforcing agency, if not already obtained.
- C. Time Limitations: MDOT 208.03B.

#### **PART 2 - PRODUCTS**

- 2.01 MATERIALS: MDOT 208.02 and as approved by the regulating agency.

#### **PART 3 - EXECUTION**

##### **3.01 PERFORMANCE:**

- A. General: Abide with all applicable rules and regulations as established by the State of Michigan and the local regulating agency in conjunction with Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 91 as amended, Michigan Soil Erosion and Sedimentation Control (formerly PA 347 of 1972, as amended).
- B. Sediment Removal:
  - 1. Take such steps as are necessary to assure the retention and removal of any sediment which enters a drainage system along the construction route before said system discharges into a stream, pond or lake.
  - 2. If eroded material is allowed to enter a storm sewer system, all catch basins, manholes, pipe and culverts shall be cleaned following construction prior to receipt of final payment. Unless CONTRACTOR can document positively to what extent an existing storm sewer system along the construction area was silted in prior to construction, no credit will be given for cleaning the system.
  - 3. Maintain roadways in a passable condition until paving is completed, including any maintenance and dust control.



C. Construction of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.

1. Provide and maintain the following temporary soil erosion and sedimentation control measures unless otherwise shown on the Drawings or in the permit:
  - a. Excavated or borrow material stock-pile:
    - (1) Place silt fence around stockpile in a manner to prevent soil erosion from entering the drainage system or leaving the site.
  - b. Trench backfill in place.
    - (1) Place silt fence across trenches, ditches and around inlets to prevent soil erosion from leaving the site or entering the drainage system until:
      - (a) Seed and mulch have been placed in non-paved areas.
      - (b) Aggregate has been placed in bituminous and gravel areas.
  - c. Dewatering discharge.
    - (1) Place bales of hay, straw and/or siltation fencing staked in place at point of discharge, adequately anchored.
  - d. Grading limits.
    - (1) Place silt fence along down gradient side of all areas disturbed by grading operations.
  - e. Catch basins.
    - (1) Provide inlet protection around catch basin and below grates. Remove after turf is established
  - f. Culvert inlets.
    - (1) Place stone check dam and silt fence upstream of all culvert inlets.
  - g. Drain cleanout.
    - (1) Excavate sediment basin and place stone check dam at downstream end prior to cleanout operation.

D. Maintenance of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.

E. Removal of Soil Erosion and Sedimentation Control Measures: MDOT 208.03D.

3.02 SCHEDULES (See Wayne County and Oakland County Soil Erosion Control Sheets).

**END OF SECTION**

## **SECTION 01 74 00**

### **CLEANING AND WASTE MANAGEMENT**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY:**

- A. This Section includes, but is not necessarily limited to, maintaining all structures and the Site in a standard of cleanliness as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.
- B. Related Sections:
  - 1. Documents affecting work of this Section include, but are not necessarily limited to:
    - a. General Conditions, Supplementary Conditions and Sections in DIVISION 01 of these Specifications.
    - b. In addition to standards described in this Section, comply with all requirements for cleaning up as described in various other Sections of these Specifications.

##### **1.02 QUALITY ASSURANCE:**

- A. Inspection:
  - 1. Daily and more often if necessary.
  - 2. Conduct inspections to verify that requirements of cleanliness are being met.

##### **1.03 DELIVERY, STORAGE AND HANDLING:**

- A. Hazards control:
  - 1. Volatile wastes:
    - a. Store in covered metal containers.
    - b. Remove from premises daily.
  - 2. Prevent accumulation of wastes which create hazardous conditions.
  - 3. Provide adequate ventilation during use of volatile or noxious substances.

##### **1.04 PROJECT CONDITIONS:**

- A. Cleaning and disposal:
  - 1. Conduct operations to comply with local ordinances and anti-pollution laws.
  - 2. Not allowed:
    - a. Burning or burying of rubbish or waste materials onsite.
    - b. Disposal of volatile wastes in storm or sanitary sewers: Volatile wastes include, but are not limited to, mineral spirits, oil or paint thinner.
    - c. Disposal of wastes into streams or waterways.

#### **PART 2 - PRODUCTS**

##### **2.01 MATERIALS AND EQUIPMENT:**

- A. Compatibility:
  - 1. Compatible with the surface being cleaned.
  - 2. Recommended by the Manufacturer of the material being cleaned.
  - 3. As reviewed by Engineer.

## **PART 3 - EXECUTION**

### **3.01 PROGRESS CLEANING:**

#### **A. General:**

1. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.
2. Store materials:
  - a. In an orderly arrangement allowing maximum access.
  - b. To allow unimpeded drainage and traffic.
  - c. Provide for the required protection of materials.
3. Scrap, debris, waste materials and other items not required for construction of the Work.
  - a. Do not allow accumulation.
  - b. Remove from Site at least each week and more often if necessary.
  - c. Provide adequate storage for all materials awaiting removal.
4. Observe all requirements for fire protection and protection of the environment.

#### **B. Site:**

1. Daily, and more often if necessary:
  - a. Inspect the Site.
  - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary:
  - a. Inspect all arrangements of materials stored onsite.
  - b. Re-stack or otherwise service all arrangements to meet the requirements of paragraph 3.01-A-1 above.
3. At all times maintain the Site in a neat and orderly condition which meets the approval of Engineer.
4. Paved surfaces: Keep clean.
5. Dust control:
  - a. Control dust on or near the Work by the application of water, or other approved means.
  - b. If Contractor fails to correct unsatisfactory conditions with 24 hours after due notification:
    - 1) Owner may arrange for such work to be performed by other means.
    - 2) Pay costs.

#### **C. Structures:**

1. Weekly, and more often if necessary:
  - a. Inspect the structures.
  - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
  - c. Sweep all interior spaces clean:
    - 1) Clean: Free from dust and other material capable of being removed by reasonable diligence using a hand-held broom.
2. Preparation for installation of succeeding material:
  - a. Clean the structures or pertinent portions thereof:
    - 1) To the degree of cleanliness recommended by the Manufacturer of the succeeding material.
    - 2) Using all equipment and materials required to achieve the required cleanliness.

3. After installation of finish floor material:
  - a. Always clean the finish floor daily while work is being performed in the space in which finish materials have been installed.
    - 1) Clean: Free from all foreign material which, in the opinion of Engineer, may be injurious to the finish floor material.
4. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

### 3.02 FINAL CLEANING:

- A. Definitions:
  1. Clean: The level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
- B. Prior to completion of the Work:
  1. Remove from the Site all tools, surplus materials, equipment, scrap, debris and waste.
  2. Conduct final progress cleaning as described in Article 3.01 above.
- C. Site:
  1. Unless otherwise specifically directed by Engineer:
    - a. Hose down all paved areas onsite and all public sidewalks directly adjacent to the Site.
    - b. Rake clean other surfaces of the grounds.
  2. Remove all resultant debris.
- D. Structures:
  1. Exterior:
    - a. Visually inspect all exterior surfaces.
    - b. Remove all traces of soil, waste material, smudges and other foreign matter.
    - c. Remove all traces of splashed materials from adjacent surfaces.
    - d. If necessary, to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.
    - e. In the event of stubborn stains not removable with water, Engineer may require light sandblasting or other cleaning at no additional cost.
  2. Interior:
    - a. Visually inspect all interior surfaces.
    - b. Remove all traces of soil, waste material, smudges and other foreign matter.
    - c. Remove all traces of splashed materials from adjacent surfaces.
    - d. Remove all paint droppings, spots, stains and dirt from finished surfaces using only the specified cleaning materials and equipment.
  3. Glass: Clean all glass inside and outside.
  4. Polished surfaces: To all surfaces requiring the routine application of buffed polish, apply the specified polish as recommended by the Manufacturer of the material being polished.
- E. Timing: Schedule final cleaning as approved by Owner or Owner's representative to enable Owner to accept a completely clean Project.

**END OF SECTION**

**SECTION 01 78 00**  
**CONTRACT CLOSEOUT**

**PART 1 - GENERAL**

**1.01 SUMMARY:**

- A. This Section includes, but is not necessarily limited to, the procedures, submittals, responsibilities and requirements for Contract closeout.

**1.02 Cleaning:**

- A. General:
  - 1. Manufactured products: Manufacturer's instructions.
  - 2. Clean-up during construction: Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by operations.
  - 3. Final clean-up: Remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all surfaces; leave the Work clean and ready for occupancy.
- B. Delinquency:
  - 1. Remedies: Failure to clean-up promptly is defective Work:
    - a. Owner may correct: ARTICLE 14 of SECTION 00 72 00 - GENERAL CONDITIONS.

**1.03 WORK RECORD DOCUMENTS:**

- A. Maintenance of Documents:
  - 1. Maintain one (1) copy at jobsite in good order of:
    - a. Contract Drawings.
    - b. Specifications.
    - c. Addenda.
    - d. Reviewed shop drawings.
    - e. Change Orders.
    - f. Other Contract modifications.
  - 2. Filing: Work specification format.
  - 3. Accessibility: To Owner and Engineer.
- B. Recording:
  - 1. Keep record documents current.
  - 2. Contract Drawings: Legibly mark to record actual construction:
    - a. Field changes of dimension and detail.
    - b. Changes made by Change Orders and Bulletins.
    - c. Details not on original Contract Drawings.
  - 3. Specifications and Addenda: Legibly mark up each SECTION to record:
    - a. Manufacturer, trade name, catalog number and supplier of products actually installed.
    - b. Changes made by Change Orders and Bulletins.
    - c. Other matters not originally specified.
- C. Submittal:
  - 1. Delivery: To Engineer prior to final payment.

2. Transmittal letter: Contain:
  - a. Date.
  - b. Project title and number.
  - c. Contractor's name and address.
  - d. Title and number of each record document.
  - e. Certification that each document, as submitted, is complete and accurate.

1.04 LUBRICATION AND START-UP:

- A. General:
  1. Manufactured Products: Manufacturer's instructions.
  2. Lubricants: One-year supply manufacturer's recommended.

1.05 TOUCH UP AND REPAIR:

- A. General:
  1. Manufactured Products: Manufacturer's instructions.
  2. Field fabricated products: Appropriate SECTIONS.

1.06 OPERATION AND MAINTENANCE MANUALS:

- A. Submit as required by Contract Documents prior to final payment.

1.07 SUBSTANTIAL COMPLETION:

- A. Procedures and Requirements: Paragraph 15.03 of the General Conditions.

1.08 REMOVAL OF TEMPORARY SOIL EROSION CONTROL MEASURES:

- A. See Section 01 57 13 – Temporary Erosion and Sedimentation Control.

1.09 FINAL PAYMENT:

- A. Procedures and Requirements: See Agreement.
- B. Submit Affidavit and Consent of Surety prior to final payment.
- C. Submit Work record documents, O & M manuals, remove temporary soil erosion control measures or provide Letter of Credit of approved amount to guarantee removal by a later date, and complete all punch list items prior to final payment.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

3.01 SCHEDULES:

- A. Attached are the following forms:
  1. Certificate of Substantial Completion.
  2. Affidavit and Consent of Surety.
  3. Letter of Credit Form

**END OF SECTION**

**CERTIFICATE OF SUBSTANTIAL COMPLETION**  
(on Engineer's Letterhead)

Owner \_\_\_\_\_

Contractor \_\_\_\_\_

Contract: \_\_\_\_\_

Project: \_\_\_\_\_

Owner's Contract No. \_\_\_\_\_ Engineer's Project No. \_\_\_\_\_

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

☐ All Work      ☐ The following specified portions of the Work:

**Date of Substantial Completion**

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

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

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:

- ☐ None  
☐ As follows:

Amendments to Contractor's responsibilities:

- ☐ None  
☐ As follows:

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

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

EXECUTED BY Engineer:

RECEIVED:

RECEIVED:

By: \_\_\_\_\_  
(Authorized Signature)

By: \_\_\_\_\_  
Owner (Authorized Signature)

By: \_\_\_\_\_  
Contractor (Authorized  
Signature)

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

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

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

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

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

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

STATE OF MICHIGAN )  
 ) ss  
COUNTY OF \_\_\_\_\_)

AFFIDAVIT

Notice to Contractor: This is a sample copy. Three completed copies of this form or similar form must be submitted to the Engineer before final payment will be recommended.

\_\_\_\_\_, Contractor

\_\_\_\_\_

\_\_\_\_\_

being duly sworn, deposes and says that he entered into an Agreement (Contract) with the \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_ (Owner) on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
for the performance of certain Work generally described as follows: \_\_\_\_\_

Contractor further says that the Work under the terms of the Contract has been completed and all sums due to Contractors, Subcontractors, suppliers and laborers with whom Contractor has contracted for performance under the Contract have been paid in full.

Furthermore, in consideration of final payment under the Contract, Contractor hereby waives and releases any and all claims or rights which Contractor may have in connection with the Contract against Owner or the premises upon which the Contract Work was performed, and agrees to indemnify Owner against any and all such claims or rights which may be asserted by Contractors, Subcontractors, Suppliers or laborers with whom Contractor has contracted for performance under the Contract.

WITNESSES:

Contractor: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_

\_\_\_\_\_  
Name and Title (Typed or printed in ink)

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_

Notary Public, \_\_\_\_\_ County \_\_\_\_\_

My commission expires: \_\_\_\_\_



CONSENT OF SURETY

The undersigned, as Surety on the above described Contract, hereby consents to the making of final payment to the Contractor under the Contract.

DATE: \_\_\_\_\_ SURETY COMPANY: \_\_\_\_\_

\_\_\_\_\_  
Signature (Attorney-in-fact)

\_\_\_\_\_  
Name and Title (Typed or printed  
in ink)

*(Attach copy of power of attorney certified to date of consent)*

**LETTER OF CREDIT FORM**

**Bank:**

***[Bank's Name and Address]***

Irrevocable Standby Letter of Credit  
Bank Reference No. \_\_\_\_\_  
Issued: \_\_\_\_\_

**Beneficiary:**

***[Owner's Name and Address]***

**Applicant:**

***[Contractor's Name and Address]***

**Project:**

***[Description of Project and remaining Work to be completed]***

Date: \_\_\_\_\_  
Expiration Date: \_\_\_\_\_ ***[as approved by Owner and Engineer]***  
Amount: USD \_\_\_\_\_ ***[as approved by Owner and Engineer]***  
Bank Reference No.: \_\_\_\_\_

Gentlemen:

We hereby establish our Irrevocable Standby Letter of Credit No. \_\_\_\_\_ in your favor for the account of **Applicant** up to an aggregate amount of USD \_\_\_\_\_ available by your draft(s) at sight drawn on **Bank**.

Drafts to be accompanied by the following document(s):

1. Beneficiary's written statement, stating: "**Applicant** has failed to satisfactorily install the **Project**."
2. Copy of Letter of Credit and any amendments.

Partial drawings are permitted.

Draft(s) must be marked "Drawn under **Bank** Irrevocable Standby Letter of Credit No. \_\_\_\_\_ dated \_\_\_\_\_."

We hereby agree with you that drafts drawn under and in strict compliance with the terms of this credit will be duly honored by us upon presentation at this office on or before our close of business on **Expiration Date**.

Except as otherwise expressly stated herein, this Letter of Credit is issued subject to the International Standby Practices of the International Chamber of Commerce ("ISP98"). This Letter of Credit shall be deemed to be a contract made under the laws of the State of Michigan and shall, as to matters not governed by ISP98, be governed by and construed in accordance with the laws of the State of Michigan, other than its conflict of laws rules, which would result in the application of the law of any jurisdiction other than the laws of the State of Michigan.

Sincerely,

**Bank**

---

Authorized Signature

---

Printed Name and title

## SECTION 32 13 14

### CONCRETE SIDEWALK, SIDEWALK RAMPS AND DRIVEWAYS

#### PART 1 - GENERAL

##### 1.01 SUMMARY:

- A. This Section includes work required for concrete sidewalks, sidewalk ramps driveways.
- B. Definitions:
  - 1. Pavement Structure: The combination of the base, subbase and bituminous or concrete surface placed on the subgrade. Pavement includes gravel, bituminous and concrete surfaced streets and driveways.
  - 2. Subgrade: The portion of the earth grade on which the concrete sidewalk is to be placed.
  - 3. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.

##### 1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2020 Standard Specifications for Construction"*.
- B. ASTM - American Society of Testing Materials, latest edition.
- C. ADAAG – Americans with Disabilities Act Accessibility Guidelines.
- D. PROWAG – Public Rights-of-Way Accessibility Guidelines

##### 1.03 SUBMITTALS:

- A. Pre-Construction:
  - 1. Concrete Mix Designs:
    - a. Provide a concrete mix design for each mix of concrete meeting the requirements of MDOT Division 10, prepared by independent lab, two weeks prior to paving. Contractor may submit concrete mix designs previously approved by MDOT.
  - 2. Material Certifications:
    - a. Provide certifications of quality by producer for the following:
      - 1) Cement.
      - 2) Aggregates.
      - 3) Admixtures.
      - 4) Curing Compound.
      - 5) Steel Reinforcement.
      - 6) Pavement marking materials.
  - 3. Batch Tickets:
    - a. In accordance with MDOT 1001.03.A.4.
- B. Post-Construction:
  - 1. Concrete Test Specimens:
    - a. Contractor shall deliver acceptance cylinders to the place of inspection and testing.

#### 1.04 JOB CONDITIONS:

- A. General Limitations: Concrete shall not be placed between November 1 and April 1 without approval of the Owner. Concrete shall not be placed when air temperature in the shade is less than 40° F and falling. Concrete shall not be placed if portions of the base, subbase, or subgrade layers are frozen, or if the grade exhibits poor stability from excessive moisture levels. Chemicals shall not be added to reduce the freezing point. Any deviation from the above, when authorized, will require protection from freezing until the concrete has attained a compressive strength of at least 1,000 psi (1,000 psi strength will typically be attained after 2 days of curing). Concrete damaged by frost action shall be removed and replaced.
- B. Clean-up promptly following sidewalk installation.
- C. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent sidewalk installation is completed.
- D. Driveway Closing: 24 hours maximum for removal and replacement of concrete plus additional 96 hours (4 days) for curing. Prior to replacement, the removed portion of the driveway shall be brought up to its proposed grade with gravel and/or bituminous.
- E. Protect areas under construction with lighted barricades and reflectorized fencing in accordance with applicable MDOT, MIOSHA and ASHA regulations.

### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS:

- A. Subbase: Granular material MDOT Class II, MDOT 902.07, Table 902-3.
- B. Concrete:
  - 1. Sidewalk and Sidewalk Ramps:
    - a. Use Concrete Grade 3500 per MDOT Section 1004 modified to 100% limestone aggregate.
- C. Joint Filler: MDOT Section 914.
- D. Forms: Rigid in accordance with MDOT 803.03.B, except at curved sections which shall utilize a bendable material to provide a uniform radius, supported at adequate intervals.
- E. Aggregate Base: Aggregate 21AA, MDOT 302.02 and 902.05.
- F. Bituminous Patching: MDOT Bituminous Mix 13A, unless otherwise specified.
- G. Bituminous Bond Coat: Asphalt material SS-1h. MDOT 501.02 and 904.03.C.
- H. Detectable Warning Surfaces:
  - 1. Material shall be Vitrified Polymer Composite (VPC) cast in place.
  - 2. Material shall be reinforced composite which is colorfast and UV stable. Truncated domes shall be fiberglass reinforced for enhanced durability. The color shall be uniform throughout.
  - 3. Color: Brick Red
  - 4. Meet MDOT and ADA Standards.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION:**

- A. Removal: Remove or saw cut at the existing joint in area of removal. Remove adjacent pavement structure necessary to place forms.
- B. Removal of subgrade material to maintain existing sidewalk elevation and meet specified concrete thickness shall be included in the cost of the sidewalk.
- C. Disposal of all removed material shall be performed by Contractor. Always keep all equipment and removed material off private property.
- D. For sidewalk crossing bituminous drives: Saw cut existing bituminous and use as forms.
- E. For sidewalk crossing concrete drives: Remove or saw cut at the existing joint.
- F. Cut and protect tree roots.
- G. Excavation: Form subgrade by trenching, excavating or filling to the required elevation.
- H. If unsuitable material exists below subgrade, remove unsuitable material. If unsuitable material is removed, place a minimum 4-inch sand subbase to elevation required for bottom of concrete. In fill areas, the subbase shall be at least 1 foot wider than the sidewalk width.
- I. Compact subbase to 95% maximum density.
- J. Scheduling: Maximum time between removal and replacement of existing sidewalk or excavation and placement of sidewalk shall be 7 days.
- K. Contractor shall notify Owner or Owner's representative of plans to pour concrete a minimum of 24-hours in advance the concrete pour. The Contractor shall provide a minimum of 2 hours between forming and pouring to allow for review. Failure to provide notice will be considered cause to reject the work.

#### **3.02 PERFORMANCE:**

- A. Sidewalk and Sidewalk Ramp Requirements:
  - 1. All sidewalks shall be a minimum of 5 feet in width, with the grade of ¼ inch per foot from the property towards the street, unless otherwise directed.
  - 2. All sidewalks shall be a minimum of 4 inches thick except through driveways where they shall be a minimum of 6 inches thick for residential and 8 inches thick, with WW mesh reinforcement, for commercial / industrial. Sidewalks shall continue through commercial driveways.
  - 3. Sidewalk ramps shall have a uniform grade except as necessary for short grade changes and shall be in conformance with the Draft PROWAG, ADAAG and these specifications. Detectable warning surfaces shall be provided, unless otherwise directed.
  - 4. Sidewalk ramps shall be 6-inch thick.
  - 5. Detectable warning surfaces:
    - a. Provide for tactile and visual warning that contrast visually with adjacent walking surfaces, either light-on-dark or dark-on-light.
    - b. Provide detectable warning plates embedded into newly cast concrete. Provide same width as sidewalk, minimum. Install in accordance with manufacturer's

recommendations, ADAAG and these specifications. Surface applied products will not be allowed. Do not construct detectable warnings by forming or stamping in newly cast concrete.

- c. Provide detectable warning plates on sidewalk ramps at intersections and where the sidewalk crosses commercial driveways with curbed Detail M openings and commercial driveways that are stop-controlled.

B. Concrete Mixing and Delivery: Transit mix concrete conforming to MDOT 1001.03.E.

C. Placing and Finishing Concrete:

1. Place concrete on a moist base in one (1) lift to the specified depth. The concrete shall be thoroughly spaded along the faces of the forms before finishing operations are started. The concrete shall be struck off to the required grade and cross section.
2. All edges and joints shall be slightly broomed transversely to roughen the surface after the concrete has received a float finish. The sidewalk ramps shall be textured with a coarse broom transversely to the ramp slope.

D. Curing and Protection:

1. Concrete shall be cured and protected as specified under MDOT Section 602.03.M and 602.03.T except that pedestrian traffic may be allowed after 48 hours if authorized. Curing compound shall be applied immediately following finishing operations.

E. Joints:

1. Joints shall be constructed to true line with their faces perpendicular to the surface of the sidewalk and shall not vary more than  $\frac{1}{4}$  inch from their designated position. Transverse joints shall be constructed at right angles to centerline of the sidewalk and longitudinal joints shall be constructed parallel to the centerline unless otherwise required. When sidewalk is constructed in partial width, transverse joints shall be placed in line with like joints in the existing sidewalk.
2. The concrete at the faces of all joints shall be thoroughly spaded or vibrated and compacted to fill all voids and the surface shall be finished smooth and substantially true to grade.
3. One-half ( $\frac{1}{2}$ ) inch transverse expansion joints shall be placed in line with all expansion joints in abutting curb, gutter or combination curb and gutter. When sidewalk does not abut such pavement,  $\frac{1}{2}$  inch transverse expansion joints shall be placed at intervals not exceeding 40 feet and at all transitions between 4 inch and 6-inch sidewalk. Expansion joint filler shall extend the full depth of the joint with the top slightly below the finished sidewalk surface. The filler shall be supported temporarily until concrete is poured against it.
4. One-half ( $\frac{1}{2}$ ) inch longitudinal expansion joints shall be placed between the sidewalk and the back of abutting parallel curb or gutter, between the sidewalk and buildings, or other rigid structures.
5. One-half ( $\frac{1}{2}$ ) inch expansion joints shall be placed between sidewalk approaches and the back of curb and gutter, or the edge of pavement, including bituminous driveways.
6. Contraction joints shall be placed at 5-foot intervals. They shall divide sidewalk into areas not more than 36 square feet nor less than 16 square feet. Contraction joints will be produced by slab division forms extending to the full depth of concrete or by cutting joints in the concrete after floating to a depth of not less than  $\frac{1}{4}$  the thickness of the concrete. The cut joints shall not be less than  $\frac{1}{8}$ -inch or more than  $\frac{1}{4}$  inch in width and shall be finished smooth and substantially true to line.

F. Backfilling and bituminous patching:

1. After concrete has gained sufficient strength (70% of design), all rails, forms, stakes and supports shall be removed in a manner as not to injure finished concrete and all

exposed edges of the concrete shall be backfilled, compacted and leveled immediately.

2. In areas where the sidewalk crosses bituminous drives, saw cut existing bituminous. Bituminous patching shall be placed and compacted.

G. Bituminous Patching:

1. Place minimum 4 inches of aggregate base 22A and compact to ninety-five percent (95%) of maximum density.
2. Place MDOT Bituminous Mix 13A to match existing HMA thickness or depth of road section.

H. Concrete curb and gutter: Owner's Standard.

1. Match existing curb and gutter.
2. Construction methods: MDOT 802.03.

3.03 TESTING AND INSPECTION:

A. Observation: By designated authorized representative.

1. Inspection of forms is required prior to pouring concrete.

B. Acceptance Testing:

1. If initial testing indicates failed or nonconformance to specification, additional testing shall be paid by Contractor. Replace nonconforming material at no additional cost.

3.04 TREE ROOT CUTTING:

A. The following information shall be used as a guide when trimming tree roots:

1. Excavate as shallow as possible in the area adjacent to the tree root.
2. Make clean cuts with a saw or sharp chisel. Do not bury jagged or torn roots.
3. Do not allow the exposed root ends to dry out. If exposed for more than a day, they can dry out. Cover all exposed roots with soil at the end of the day.
4. Avoid cutting roots larger than 3.5 inches.

3.05 TREE ROOT BARRIER:

A. Install tree root barrier along the sidewalk adjacent to trees to reduce future damage by tree roots. Installation shall be in accordance with manufacturer's recommendations.

B. Install in 4-inch wide trench (with roots removed) adjacent to the sidewalk between the sidewalk and tree to a minimum depth of 30 inches. Secure with pins. Backfill carefully to avoid dislodging the barrier and compact firmly.

C. Manufacturer: Typar Biobarrier or approved equal.

3.06 SCHEDULES (See Details attached)

A. MDOT Standard Plan R-28-J SIDEWALK RAMP AND DETECTABLE WARNING DETAILS (7 sheets).

**END OF SECTION**



## SECTION 32 92 00

### SURFACE PROTECTION, RESTORATION AND TURF ESTABLISHMENT

#### PART 1 - GENERAL

##### 1.01 SUMMARY:

- A. Work included in this specification consists of the establishment of a durable, permanent, weed free, mature, perennial turf and protection and restoration of site improvements.
- B. Definition of Site Improvements: Fences, mailboxes, street signs, sheds, playground equipment, landscaping stones and decorations, underground lawn irrigation systems, retaining walls, parking appurtenances, and yard accessories.

##### 1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2020 Standard Specifications for Construction"*.
- B. MDOT – Michigan Department of Transportation, "Materials Source Guide" current edition.
- C. ASTM – American Society of Testing Materials, latest edition.

##### 1.03 SUBMITTALS:

- A. Pre-Construction:
  - 1. Seed mixture.
  - 2. Fertilizer product.
  - 3. Herbicide product and application method

##### 1.04 JOB REQUIREMENTS:

- A. Surface Areas Disturbed by Construction Operation:
  - 1. Restoration and Turf Establishment:
    - a. Fine grade to 4 inches below finished grade.
    - b. Remove all stones and debris greater than 1-inch diameter.
    - c. Place 4 inches of topsoil.
    - d. Rake smooth to finished grade, seed, fertilize and mulch, or place mulch blanket pegged in place, where specified or required for slope stability.
- B. Site Improvements:
  - 1. Protect all items not indicated for removal.
  - 2. Where Site Improvements impact proposed construction, remove the item carefully, store and protect the item and reinstall the item upon completion of construction.
- C. Scheduling:
  - 1. Restoration of lawns and other surface features:
    - a. As soon as possible after final grading of the areas designated for turf establishment but no later than the maximum time frames stated in MDOT 208.03 or as required by project soil erosion control permit.
  - 2. Clean up: Promptly following restoration.

- D. Seasonal Limitations:
  - 1. MDOT 816.03.C.4.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS:**

- A. Topsoil:
  - 1. Topsoil may be salvaged and reinstalled from the project site or imported to the site:
    - a. Salvaged topsoil:
      - 1) Must be segregated during construction and kept free of intermingling with other soils.
      - 2) The acceptance of salvaged topsoil is subject to its ability to establish turf. The salvaged topsoil must be acceptable to the Owner and property owner after turf is established. The existing topsoil may or may not be acceptable in its existing condition.
    - 2. Material:
      - a. Salvaged and imported topsoil:
        - 1) Shall be screened and amended either on-site or off-site.
        - 2) Shall be loose, friable, and free of refuse and foreign material.
        - 3) 20% minimum organic material by test method ASTM D2974.
        - 4) pH of 6.8 to 7.5 by test method ASTM D4972.
        - 5) Gradation:
          - a) 100% passing the ½" sieve.
          - b) 98% minimum passing the ¼" sieve.
          - c) 30% maximum passing the #200 sieve.
- B. Grass Seed Mixture:
  - 1. All species and their cultivars or varieties must be guaranteed hardy for Michigan.
  - 2. The species selected must be disease and insect resistant and of good color.
  - 3. Grass seed mix shall contain no more than 5% inert material by weight.
  - 4. The species of seed selected must be adapted for the site conditions and locations including but not limited to manicured yards.
  - 5. Grass Seed Mix shall be comprised of at least four of the below species and each species selected shall be 5% to 25% of the grass seed mixture by weight. At least two species selected shall be salt tolerant.
    - a. Kentucky Bluegrass.
    - b. Perennial Ryegrass.
    - c. Hard Fescue.
    - d. Creeping Red Fescue.
    - e. Chewings Fescue.
    - f. Turf-type Tall Fescue.
    - g. Buffalo grass.
    - h. Alkaligrass-Fults Puccinellia distans.
- C. Chemical Fertilizer: MDOT 917.09, Class A.
  - 1. Phosphorus can only be used at the time of planting or when soil conditions require.
- D. Hydro-mulch: MDOT 917, Recycled newsprint or wood fiber.
- E. Co-polymer Gel: Finn Hydro Gel B, or equal.

- F. Herbicide:
  - 1. Herbicides shall be furnished and applied as required to control weed growth. The Contractor shall select the herbicide and rate of application in accordance with the manufacturer's recommendations. The Contractor shall comply with all federal, state and local laws as noted in MDOT Section 107.
- G. Water:
  - 1. Water shall be furnished and applied from an approved source. Do not draw water from any waterway (i.e. river, ditch, creek, lake, etc.)
- H. Sod:
  - 1. MDOT 917.12.
- I. Mulch Blanket:
  - 1. MDOT 917.14, Excelsior or straw mulch blanket listed on the current Qualified Products List in the MDOT Materials Source Guide.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION:**

- A. Prior to construction, provide advance notice to property owners of privately-owned surface features within the project area to allow the property owner time to remove or relocate them.
- B. Prior to placing topsoil, shape, compact and assure all areas to be seeded are debris and weed free. Place topsoil to a minimum depth of 4 inches and to meet proposed finished grade. If the area being restored requires more than the minimum depth of topsoil to meet finished grade, this additional depth shall be filled using topsoil. Furnishing and placing this additional material will not be paid separately.

#### **3.02 TREES AND SHRUBS:**

- A. Protect all trees and shrubs during construction.
- B. Where existing trees and shrubs will be impacted by construction, Contractor shall prune or trim branches in accordance with industry standard horticulture practice.
- C. Tree limbs inadvertently damaged during construction shall be trimmed to remove the damaged portion within 5 days. Contractor shall notify the property owner and Owner or Owner's representative of the inadvertent damage caused and the remedy.

#### **3.03 IRRIGATION SYSTEMS:**

- A. Contractor shall make every effort to protect existing irrigation systems adjacent to the project area.
- B. Irrigation repair is the responsibility of the Contractor. Where existing irrigation systems are encountered during construction the Contractor shall temporarily relocate or remove as required to place the proposed improvements and repair the irrigation system promptly following construction of the improvements. This work may require cutting and capping of the existing sprinkler lines and salvaging of the existing sprinkler heads for reuse during replacement. Where lines are cut Contractor shall take measures to prevent dirt or debris

from entering the existing sprinkler lines or heads. Damaged irrigation heads shall be replaced in-kind. Acceptance of the repair subject to the approval of the property owner.

3.04 TOPSOIL:

- A. Place 4 inches of topsoil in preparation of seeding.
- B. Construction methods:
  - 1. MDOT 816.03.A.

3.05 HYDROSEEDING, FERTILIZING AND MULCHING:

- A. Construction methods: Hydro-seed with mixture of seed, fertilizer, and mulch, and co-polymer gel with the following minimum rates:
  - 1. Seed:
    - a. 220 pounds per acre.
  - 2. Fertilizer:
    - a. 228 pounds per acre.
  - 3. Mulch:
    - a. 1,200 pounds per acre of recycled newsprint or 2,000 pounds per acre of wood fiber.
  - 4. Co-polymer gel:
    - a. 10 pounds per acre between June 1 and September 1.
    - b. Zero at other times of the year.

3.06 MULCH BLANKET:

- A. Construction Methods:
  - 1. MDOT 816.

3.07 MAINTENANCE

- A. Weeding:
  - 1. Weeds must be controlled to less than 10% of the turf establishment area during establishment and turf shall be weed free at time of acceptance.
  - 2. The Contractor shall apply weed killer no sooner than recommended for newly established turf by weed control product manufacturer.
- B. Watering:
  - 1. Shall occur at minimum of twice per week for 2 months after turf establishment has been placed.
  - 2. Amount of water shall total a combined minimum of 1.5 inches of natural rainwater, irrigation water and contractor applied water per week.
- C. Repair:
  - 1. The Contractor is responsible, at no additional cost, for the repair of turf establishment work occasioned by storm events up to 3 inches of rain in a 24-hour period as documented by local meteorological data.
  - 2. Repairs made to damaged turf establishment areas as a result of a documented storm by a local meteorological data resulting in rainfall amounts of more than 3 inches in a 24 hr period will be paid for as an increase to the turf restoration quantity.

D. Inspections:

1. The Contractor is responsible for all inspection of turf establishment work. Provide notification to Owner or Owner's representative of upcoming inspections or maintenance work.
2. Provide a Contractor's Daily Report to report inspections made and to document turf establishment work performed on this project.
3. Complete and submit a Contractor's Daily Report when any work performed is in progress.
4. Include all necessary materials documentation including tests slips, certifications, etc. with the associated Contractor's Daily Report.

3.08 ACCEPTANCE

A. Final Acceptance:

1. Before final acceptance of the turf establishment work there must be no exposed bare soil and the turf must be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition.
2. Once growth of weed-free grass has been achieved the Contractor's responsibility in this matter shall have ended. However, it is to be clearly understood that any failure on the part of the property owner to properly care for the restored lawn area prior to achieving a good growth of weed-free grass shall in no way relieve the Contractor of his responsibility as set forth above.

3.09 SITE IMPROVEMENTS:

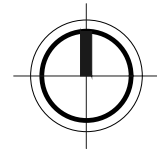
- A. Site Improvements damaged by contractor shall be replaced by Contractor at Contractor's cost.
- B. Unique and one-of-a-kind items damaged during construction shall be repaired, replaced or otherwise resolved by the Contractor to its owner's satisfaction.

**END OF SECTION**

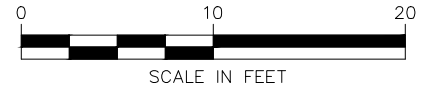
## **APPENDIX A**

### ***ALLEN TERRACE PLANS***

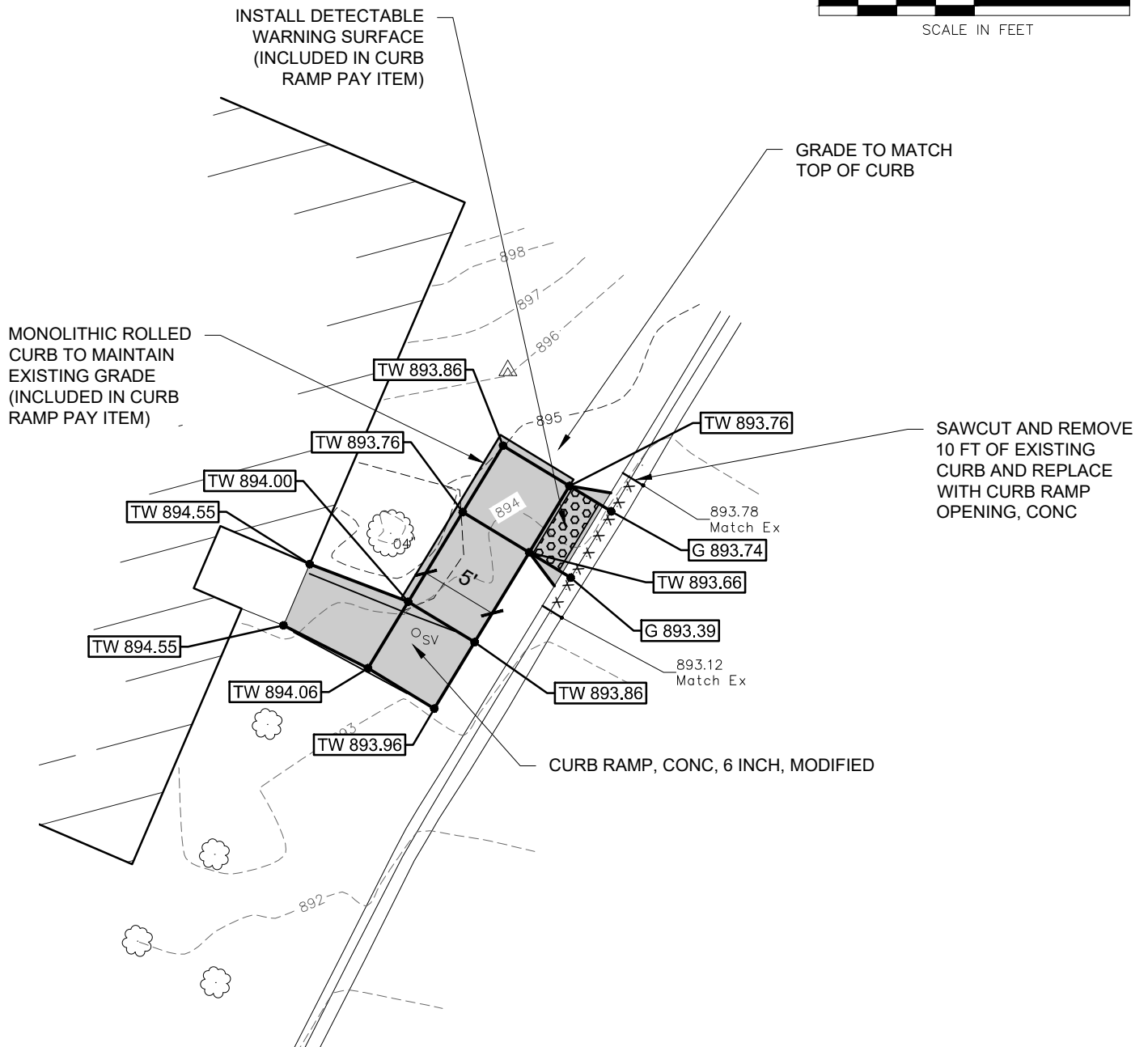
***401 HIGH STREET,  
NORTHVILLE, MICHIGAN 48167***




NORTH



SCALE IN FEET



**LEGEND**

 Curb Ramp, Conc, 6" inch, Modified

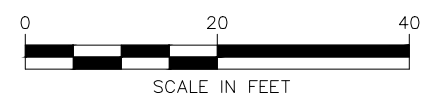
SHEET 1

MARCH, 2023

**CITY OF NORTHVILLE**  
CITY OF NORTHVILLE, WAYNE COUNTY, MI  
**ALLEN TERRACE**  
**EAST ADA RAMP**

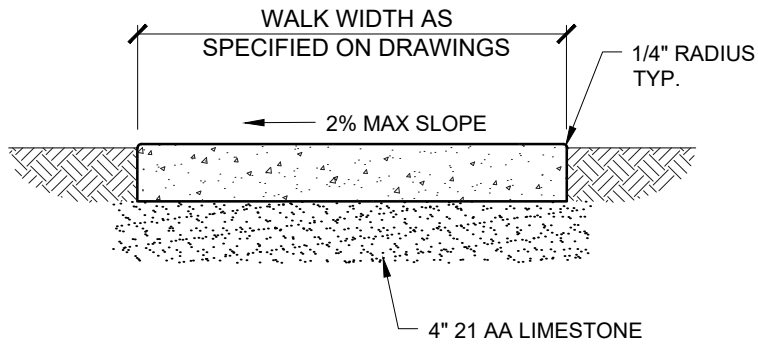
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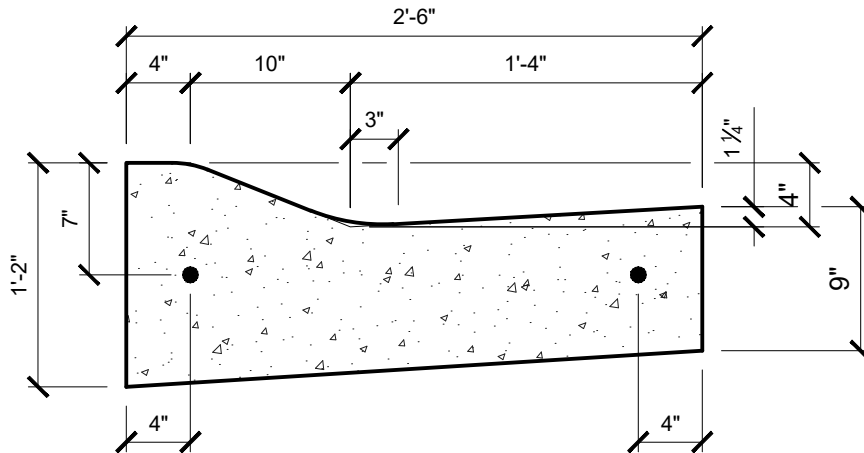




**NOTES:**

1.  $\frac{1}{2}$ " EXPANSION JOINTS SHALL BE MAXIMUM OF 50' ON CENTER
2.  $\frac{1}{2}$ " EXPANSION JOINT MATERIAL SHALL BE PLACED BETWEEN SIDEWALK AND RIGID STRUCTURES.
3. INsofar AS POSSIBLE, SIDEWALK SHALL BE DIVIDED INTO SQUARE UNIT AREAS BY MEANS OF CUT CONTROL JOINTS NOT MORE THAN 36 SFT OR LESS THAN 16 SFT.

## 6" CONCRETE SIDEWALK



## MDOT D2 CURB AND GUTTER

NOT TO SCALE

**NOTES:**

1. REFER TO MDOT STANDARD PLAN R-28-J FOR CURB RAMP OPENING SECTION, SHEET 2 OF 7.

SHEET 3

MARCH, 2023

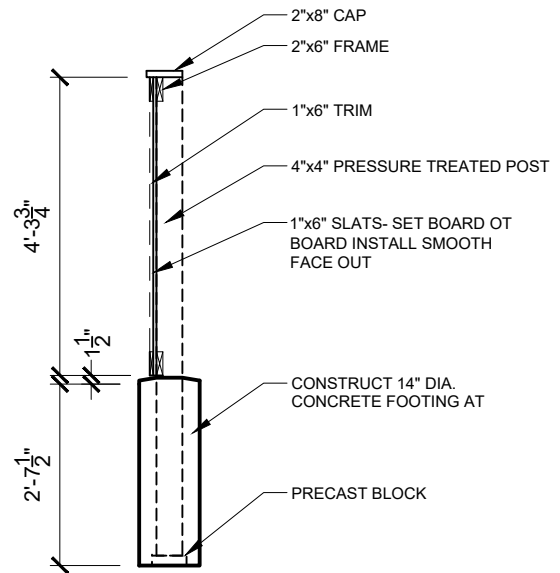
**CITY OF NORTHVILLE**  
CITY OF NORTHVILLE, WAYNE COUNTY, MI  
**ALLEN TERRACE**

**DETAILS**

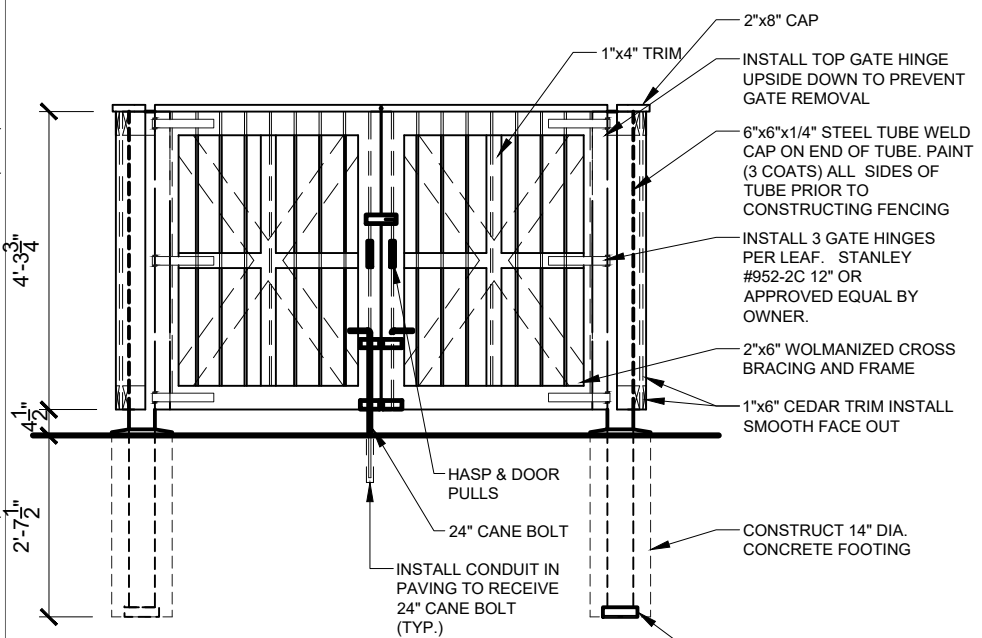
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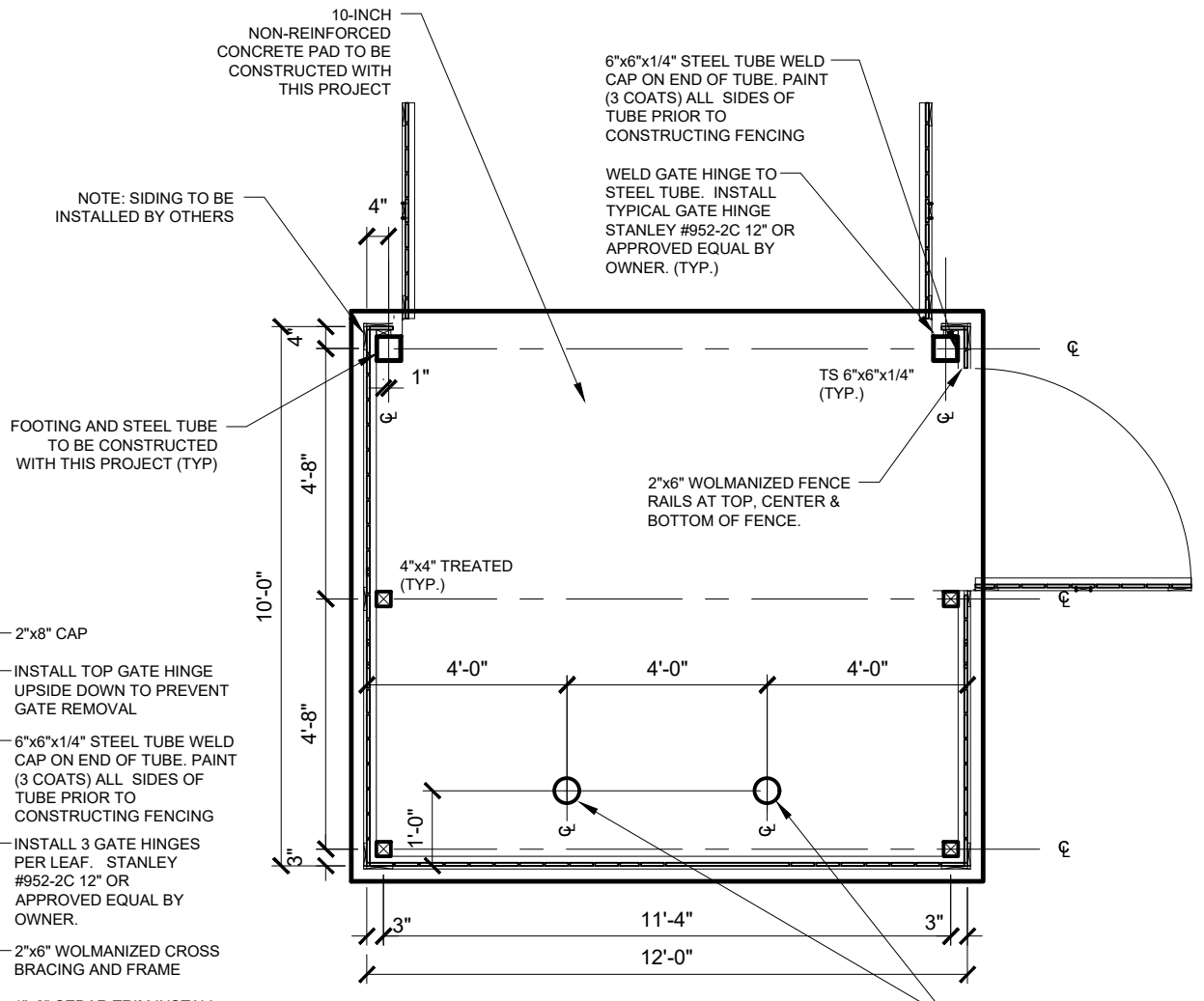
**SECTION-ELEVATION OF SIDE**



**SECTION - ELEVATION OF FRONT GATE**

**SINGLE DUMPSTER ENCLOSURE**

NOT TO SCALE



**PLAN**

NOTE: DETAIL SHOWN IS FOR SINGLE LOADED DUMPSTERS. DUMPSTERS SHOWN ON SITE PLAN TO BE SINGLE LOADED (10'x 12').

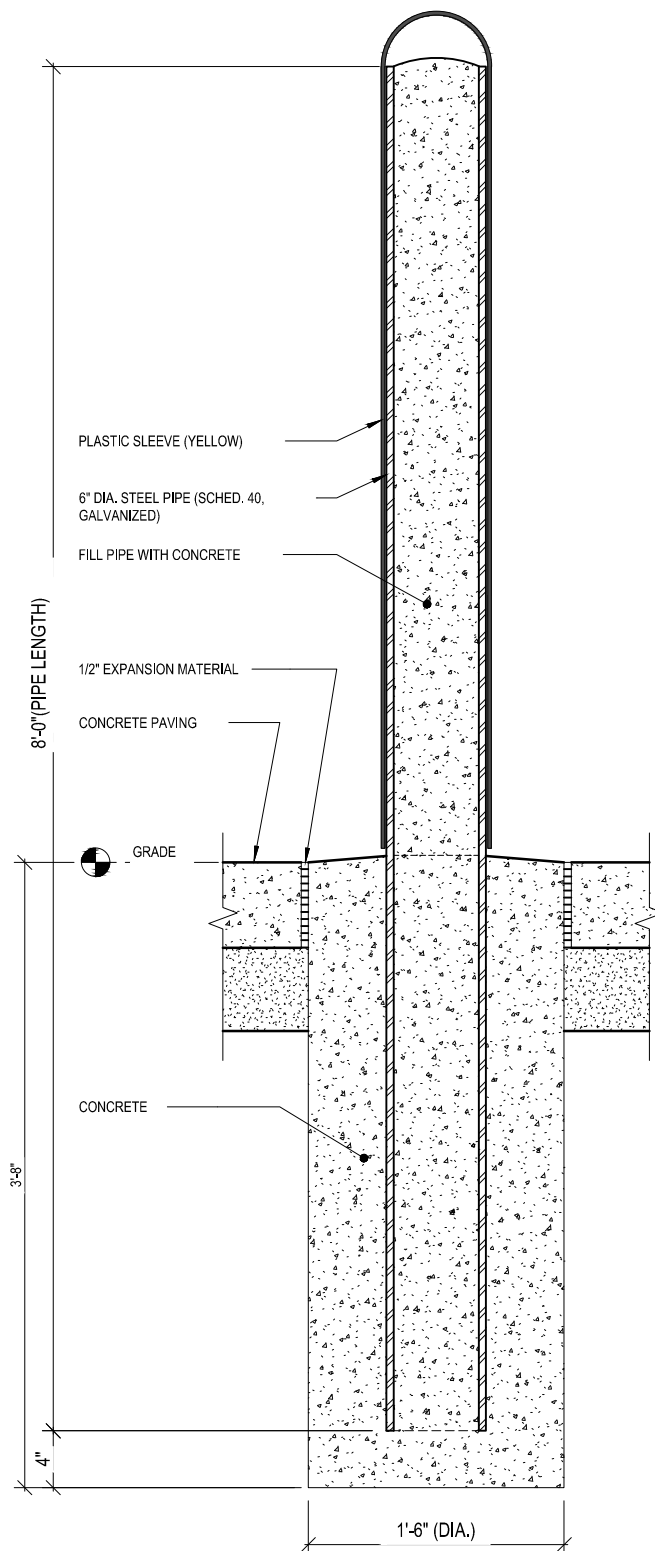
6-INCH DIA STEEL BOLLARD TO BE CONSTRUCTED WITH THIS PROJECT (TYP)

**CITY OF NORTHVILLE**  
CITY OF NORTHVILLE, WAYNE COUNTY, MI  
**ALLEN TERRACE ADA RAMP**  
**DUMPSTER ENCLOSURE DETAIL**

858250  
F&V PROJECT NO.



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NOTE TO SCALE

SHEET 5

MARCH, 2023

**CITY OF NORTHVILLE**  
**CITY OF NORTHVILLE, WAYNE COUNTY, MI**  
**ALLEN TERRACE**  
**TYPICAL BOLLARD DETAIL**

F&V PROJECT NO. 858250



**APPENDIX B**

***USDA NRCS CUSTOM SOIL RESOURCE REPORT FOR  
THE CITY OF NORTHVILLE  
OAKLAND COUNTY AND WAYNE COUNTY  
MICHIGAN***



United States  
Department of  
Agriculture

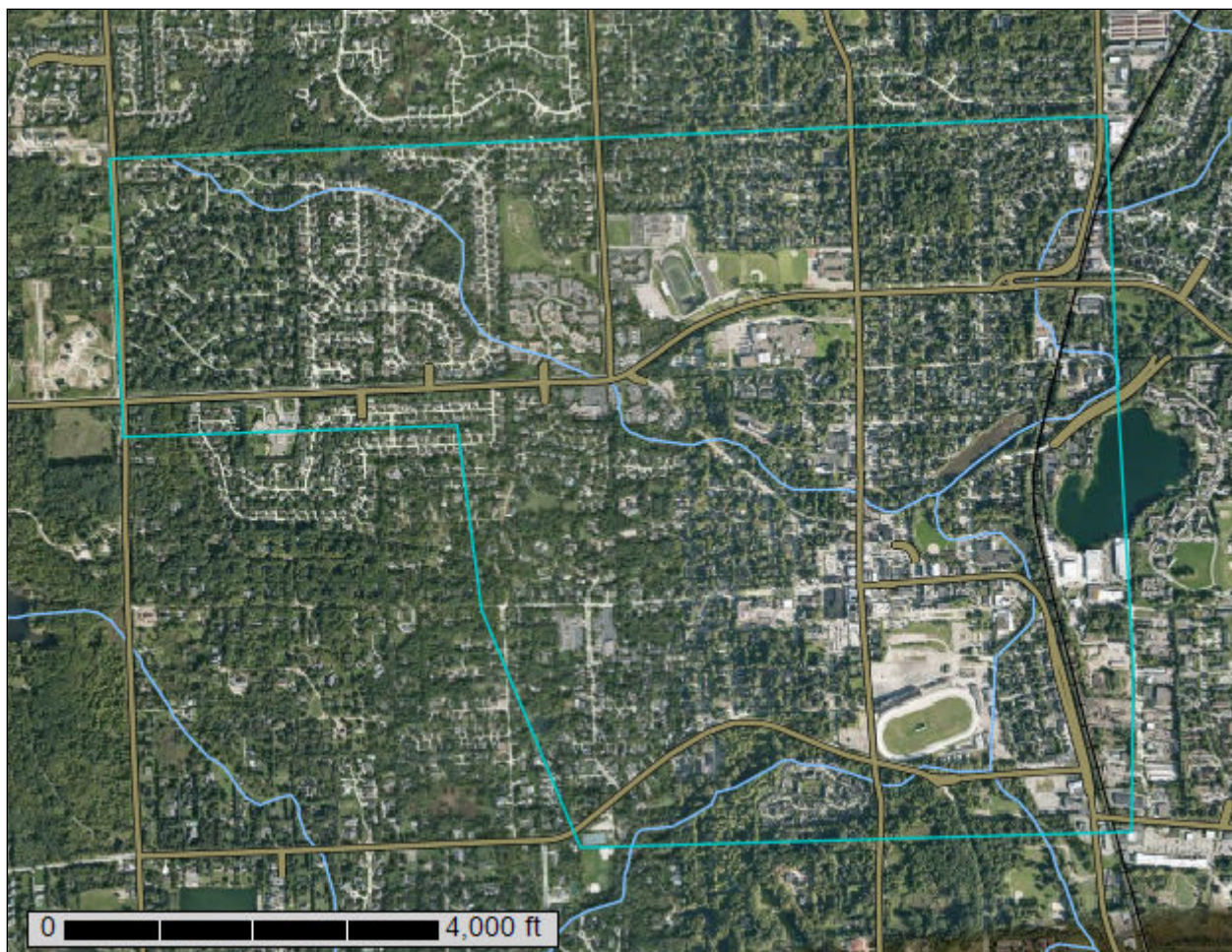
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Oakland County, Michigan, and Wayne County, Michigan

Northville



May 18, 2019

# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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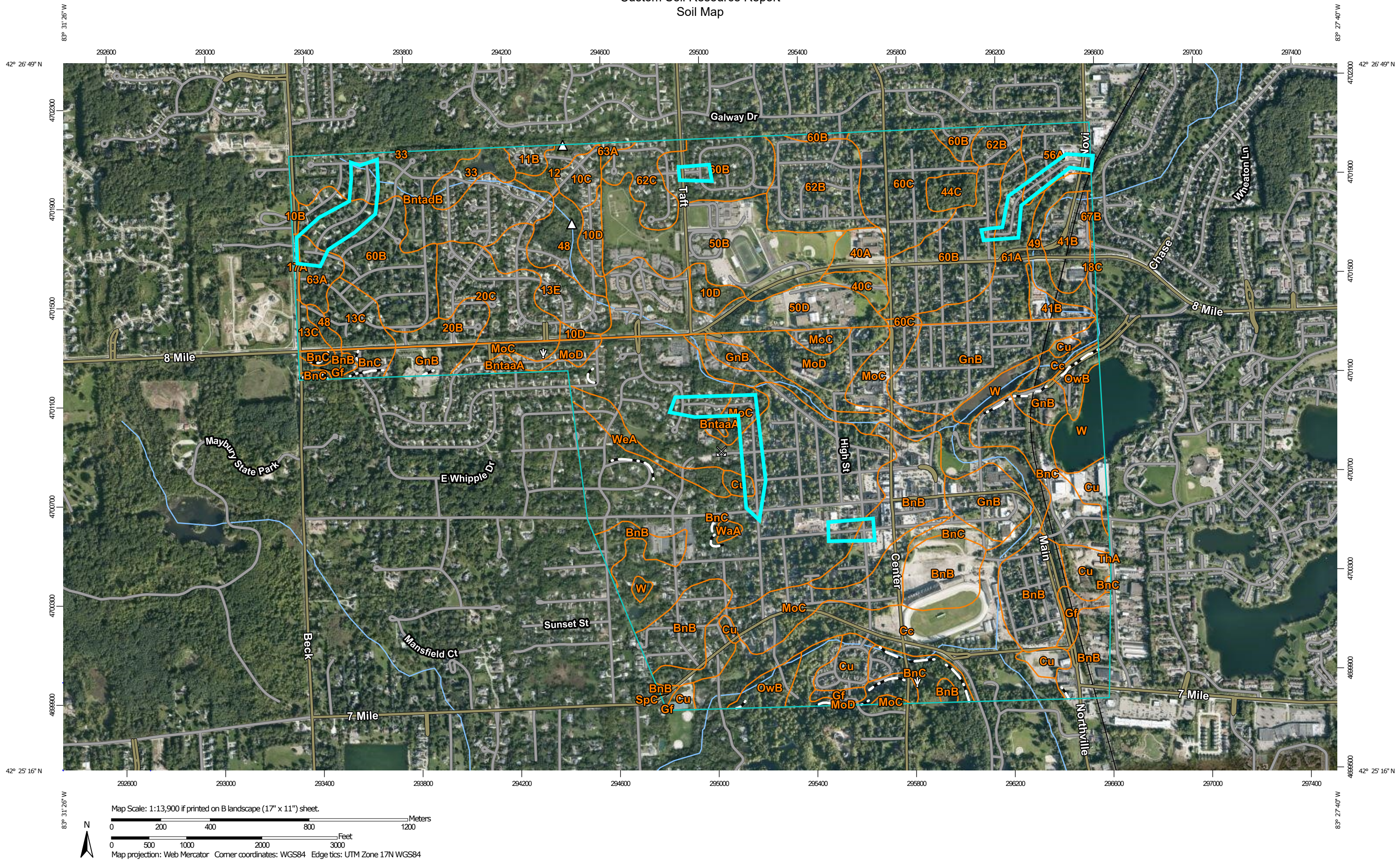
# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Custom Soil Resource Report  
Soil Map





# Custom Soil Resource Report

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

### Water Features

 Streams and Canals

### Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Oakland County, Michigan

Survey Area Data: Version 17, Sep 7, 2018

Soil Survey Area: Wayne County, Michigan

Survey Area Data: Version 4, Sep 11, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 1, 2018—Nov 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

## MAP LEGEND

## MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10B	Marlette sandy loam, 1 to 6 percent slopes	1.1	0.1%
10C	Marlette sandy loam, 6 to 12 percent slopes	7.7	0.5%
10D	Marlette loam, 12 to 18 percent slopes	13.4	0.9%
11B	Capac sandy loam, 0 to 4 percent slopes	4.2	0.3%
12	Brookston and Colwood loams	6.1	0.4%
13C	Oshtemo-Boyer loamy sands, 6 to 12 percent slopes	16.7	1.2%
13E	Oshtemo-Boyer loamy sands, 12 to 40 percent slopes	19.7	1.4%
17A	Wasepi sandy loam, 0 to 3 percent slopes	1.4	0.1%
18C	Fox sandy loam, Huron Lobe, 6 to 12 percent slopes	1.3	0.1%
20B	Glynwood loam, 2 to 6 percent slopes	10.7	0.7%
20C	Glynwood loam, 6 to 12 percent slopes	30.6	2.1%
33	Lenawee silty clay loam, 0 to 1 percent slopes	10.1	0.7%
40A	Udorthents, loamy, nearly level	9.1	0.6%
40C	Udorthents, loamy, rolling	5.4	0.4%
41B	Aquents, sandy, loamy, undulating	21.2	1.5%
44C	Riddles sandy loam, 6 to 12 percent slopes	6.7	0.5%
48	Gilford sandy loam, till plain, 0 to 2 percent slopes	18.0	1.3%
49	Cohoctah fine sandy loam	12.0	0.8%
50B	Udipsamments, undulating	64.5	4.5%
50D	Udipsamments, rolling to steep	49.0	3.4%
56A	Urban land-Blount-Lenawee complex, 0 to 3 percent slopes	16.4	1.1%
60B	Urban land-Marlette complex, 0 to 8 percent slopes	116.8	8.1%
60C	Urban land-Marlette complex, 8 to 15 percent slopes	38.3	2.7%
61A	Urban land-Capac complex, 0 to 3 percent slopes	27.9	1.9%

# Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
62B	Urban land-Spinks complex, 0 to 8 percent slopes	40.7	2.8%
62C	Urban land-Spinks complex, 8 to 15 percent slopes	16.0	1.1%
63A	Urban land-Thetford complex, 0 to 3 percent slopes	10.6	0.7%
67B	Ormas loamy sand, 0 to 6 percent slopes	0.9	0.1%
BntadB	Blount loam, 0 to 4 percent slopes	56.9	4.0%
<b>Subtotals for Soil Survey Area</b>		<b>633.0</b>	<b>44.1%</b>
<b>Totals for Area of Interest</b>		<b>1,436.1</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BnB	Boyer loamy sand, 0 to 6 percent slopes	127.3	8.9%
BnC	Boyer loamy sand, 6 to 12 percent slopes	271.6	18.9%
BntaaA	Blount loam, 0 to 2 percent slopes	3.2	0.2%
Cc	Cohoctah fine sandy loam, frequently flooded	108.7	7.6%
Cu	Cut and fill land	35.3	2.5%
Gf	Gilford sandy loam	9.8	0.7%
GnB	Glynwood loam, 2 to 6 percent slopes	80.9	5.6%
MoC	Morley loam, 6 to 12 percent slopes	72.0	5.0%
MoD	Morley loam, 12 to 18 percent slopes	44.0	3.1%
OwB	Owosso-Morley complex, 2 to 6 percent slopes	14.0	1.0%
SpC	Spinks loamy sand, 6 to 12 percent slopes	0.8	0.1%
ThA	Thetford loamy sand, 0 to 2 percent slopes	0.1	0.0%
W	Water	22.2	1.5%
WaA	Wasepi loamy sand, 0 to 2 percent slopes	1.5	0.1%
WeA	Wasepi loamy sand, loamy substratum, 0 to 2 percent slopes	11.6	0.8%
<b>Subtotals for Soil Survey Area</b>		<b>803.1</b>	<b>55.9%</b>
<b>Totals for Area of Interest</b>		<b>1,436.1</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas



shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Oakland County, Michigan

### 10B—Marlette sandy loam, 1 to 6 percent slopes

#### Map Unit Setting

*National map unit symbol:* 6bgk  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Marlette and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Marlette

##### Setting

*Landform:* Knolls on moraines, flats on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy ablation till

##### Typical profile

*H1 - 0 to 8 inches:* sandy loam  
*H2 - 8 to 22 inches:* loam  
*H3 - 22 to 31 inches:* clay loam  
*H4 - 31 to 60 inches:* loam

##### Properties and qualities

*Slope:* 1 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 30 to 72 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.8 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

#### Minor Components

##### Oshtemo

*Percent of map unit:* 2 percent  
*Landform:* Knolls on moraines, knolls on beach ridges, knolls on outwash plains

## Custom Soil Resource Report

*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **Capac**

*Percent of map unit:* 2 percent  
*Landform:* Drainageways on till plains, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **Brookston**

*Percent of map unit:* 2 percent  
*Landform:* Till plains, depressions on lake plains, depressions on moraines, depressions on moraines  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### **Fox**

*Percent of map unit:* 2 percent  
*Landform:* Knolls on outwash plains, knolls on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **Metamora**

*Percent of map unit:* 2 percent  
*Landform:* Drainageways on till plains, drainageways on moraines, flats on till plains, flats on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## **10C—Marlette sandy loam, 6 to 12 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bgl  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Marlette and similar soils:* 92 percent

## Custom Soil Resource Report

*Minor components: 8 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Marlette

#### Setting

*Landform:* Hills on moraines

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy ablation till

#### Typical profile

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 22 inches:* clay loam

*H3 - 22 to 31 inches:* clay loam

*H4 - 31 to 60 inches:* loam

#### Properties and qualities

*Slope:* 6 to 12 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* High (about 9.8 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Metamora

*Percent of map unit:* 2 percent

*Landform:* Drainageways on till plains, drainageways on moraines, flats on till plains, flats on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Fox

*Percent of map unit:* 2 percent

*Landform:* Hills on moraines, hills on outwash plains

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

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*Landform position (three-dimensional):* Interfluve, head slope, nose slope, side slope, base slope, crest  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Capac

*Percent of map unit:* 2 percent  
*Landform:* Drainageways on till plains, drainageways on moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope, side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Oshtemo

*Percent of map unit:* 2 percent  
*Landform:* Hills on moraines, hills on outwash plains, hills on beach ridges  
*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit  
*Landform position (three-dimensional):* Interfluve, head slope, nose slope, side slope, base slope, crest  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## 10D—Marlette loam, 12 to 18 percent slopes

### Map Unit Setting

*National map unit symbol:* 6bgm  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Marlette and similar soils:* 94 percent  
*Minor components:* 6 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Marlette

#### Setting

*Landform:* Ridges on moraines  
*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope  
*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluve  
*Down-slope shape:* Convex, linear

## Custom Soil Resource Report

*Across-slope shape:* Concave, convex

*Parent material:* Loamy ablation till

### Typical profile

*H1 - 0 to 8 inches:* loam

*H2 - 8 to 22 inches:* clay loam

*H3 - 22 to 31 inches:* clay loam

*H4 - 31 to 60 inches:* loam

### Properties and qualities

*Slope:* 12 to 18 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Capac

*Percent of map unit:* 2 percent

*Landform:* Drainageways on till plains, drainageways on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Metamora

*Percent of map unit:* 2 percent

*Landform:* Drainageways on till plains, drainageways on moraines, flats on till plains, flats on moraines

*Landform position (two-dimensional):* Footslope, toeslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Oshtemo

*Percent of map unit:* 2 percent

*Landform:* Escarpments on beach ridges, escarpments on outwash plains, escarpments on moraines

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex, concave  
*Hydric soil rating:* No

## **11B—Capac sandy loam, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bgp  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Prime farmland if drained

### **Map Unit Composition**

*Capac and similar soils:* 92 percent  
*Minor components:* 8 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Capac**

#### **Setting**

*Landform:* Drainageways on till plains, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy ablation till

#### **Typical profile**

*H1 - 0 to 8 inches:* sandy loam  
*H2 - 8 to 32 inches:* clay loam  
*H3 - 32 to 60 inches:* loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Hydric soil rating:* No

## Minor Components

### Dixboro

*Percent of map unit:* 2 percent  
*Landform:* Flats on till plains, flats on outwash deltas on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Brookston

*Percent of map unit:* 2 percent  
*Landform:* Depressions on moraines, depressions on lake plains, depressions on till plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Colwood

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Selfridge

*Percent of map unit:* 2 percent  
*Landform:* Flats on till plains, drainageways on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## 12—Brookston and Colwood loams

### Map Unit Setting

*National map unit symbol:* 6bgq  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Brookston and similar soils:* 55 percent  
*Colwood and similar soils:* 35 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*



## Description of Brookston

### Setting

*Landform:* Depressions on lake plains, depressions on till plains, depressions on moraines

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy ablation till

### Typical profile

*H1 - 0 to 16 inches:* loam

*H2 - 16 to 36 inches:* clay loam

*H3 - 36 to 60 inches:* loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Very poorly drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* About 0 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum in profile:* 35 percent

*Available water storage in profile:* High (about 9.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2w

*Hydrologic Soil Group:* B/D

*Hydric soil rating:* Yes

## Description of Colwood

### Setting

*Landform:* Depressions on moraines, depressions on till plains, depressions on lake plains

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Stratified loamy glaciofluvial deposits

### Typical profile

*H1 - 0 to 11 inches:* loam

*H2 - 11 to 37 inches:* silty clay loam

*H3 - 37 to 60 inches:* stratified fine sand to silt loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* About 0 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 20 percent  
*Available water storage in profile:* High (about 11.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Hydric soil rating:* Yes

### Minor Components

#### Sebewa

*Percent of map unit:* 3 percent  
*Landform:* Depressions on outwash plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

#### Gilford

*Percent of map unit:* 3 percent  
*Landform:* Depressions on outwash plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

#### Selfridge

*Percent of map unit:* 1 percent  
*Landform:* Flats on till plains, drainageways on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Capac

*Percent of map unit:* 1 percent  
*Landform:* Drainageways on till plains, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Metamora

*Percent of map unit:* 1 percent  
*Landform:* Drainageways on till plains, drainageways on moraines, flats on till plains, flats on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Kibbie

*Percent of map unit:* 1 percent  
*Landform:* Flats on outwash deltas on till plains, flats on till plains, drainageways on till plains, drainageways on outwash deltas on till plains

*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **13C—Oshtemo-Boyer loamy sands, 6 to 12 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 6bgs  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Farmland of local importance

#### **Map Unit Composition**

*Oshtemo and similar soils:* 50 percent  
*Boyer and similar soils:* 35 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Oshtemo**

##### **Setting**

*Landform:* Hills on outwash plains, hills on beach ridges, hills on ice-contact slopes  
*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope  
*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy supraglacial till over sandy and gravelly glaciofluvial deposits

##### **Typical profile**

*H1 - 0 to 7 inches:* loamy sand  
*H2 - 7 to 18 inches:* loamy sand  
*H3 - 18 to 41 inches:* sandy loam  
*H4 - 41 to 55 inches:* loamy sand  
*H5 - 55 to 60 inches:* stratified sand to gravelly sand

##### **Properties and qualities**

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 25 percent  
*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

### Description of Boyer

#### Setting

*Landform:* Hills on beach ridges, hills on outwash plains, hills on ice-contact slopes  
*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope  
*Landform position (three-dimensional):* Interfluvium, head slope, nose slope, side slope, base slope, crest  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy supraglacial till over sandy and gravelly glaciofluvial deposits

#### Typical profile

*H1 - 0 to 6 inches:* loamy sand  
*H2 - 6 to 18 inches:* loamy sand  
*H3 - 18 to 27 inches:* gravelly sandy loam  
*H4 - 27 to 60 inches:* gravelly sand

#### Properties and qualities

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 25 percent  
*Available water storage in profile:* Low (about 4.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

### Minor Components

#### Riddles

*Percent of map unit:* 7 percent  
*Landform:* Hills on ice-contact slopes

## Custom Soil Resource Report

*Landform position (two-dimensional):* Backslope, toeslope, summit, shoulder, footslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, concave

*Hydric soil rating:* No

### **Wasepi**

*Percent of map unit:* 4 percent

*Landform:* Flats on ice-contact slopes, drainageways on ice-contact slopes

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Gilford**

*Percent of map unit:* 4 percent

*Landform:* Depressions on ice-contact slopes

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, talus

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

## **13E—Oshtemo-Boyer loamy sands, 12 to 40 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bgt

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Oshtemo and similar soils:* 50 percent

*Boyer and similar soils:* 35 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Oshtemo**

#### **Setting**

*Landform:* Hills on outwash plains, hills on ice-contact slopes, hills on beach ridges

*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope

## Custom Soil Resource Report

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluve

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, concave

*Parent material:* Loamy supraglacial till over sandy and gravelly glaciofluvial deposits

### Typical profile

*H1 - 0 to 7 inches:* loamy sand

*H2 - 7 to 18 inches:* loamy sand

*H3 - 18 to 41 inches:* sandy loam

*H4 - 41 to 55 inches:* loamy sand

*H5 - 55 to 60 inches:* stratified sand to gravelly sand

### Properties and qualities

*Slope:* 12 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 25 percent

*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

## Description of Boyer

### Setting

*Landform:* Hills on beach ridges, hills on outwash plains, hills on ice-contact slopes

*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope

*Landform position (three-dimensional):* Interfluve, head slope, nose slope, side slope, base slope, crest

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, concave

*Parent material:* Loamy supraglacial till over sandy and gravelly glaciofluvial deposits

### Typical profile

*H1 - 0 to 6 inches:* loamy sand

*H2 - 6 to 18 inches:* loamy sand

*H3 - 18 to 27 inches:* gravelly sandy loam

*H4 - 27 to 60 inches:* gravelly sand

### Properties and qualities

*Slope:* 12 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

## Custom Soil Resource Report

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 25 percent

*Available water storage in profile:* Low (about 4.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

### Minor Components

#### Wasepi

*Percent of map unit:* 5 percent

*Landform:* Flats on ice-contact slopes, drainageways on ice-contact slopes

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Riddles

*Percent of map unit:* 5 percent

*Landform:* Hills on ice-contact slopes

*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, concave

*Hydric soil rating:* No

#### Arkport

*Percent of map unit:* 5 percent

*Landform:* Hills on ice-contact slopes, hills on outwash deltas on ice-contact slopes

*Landform position (two-dimensional):* Summit, shoulder, backslope, toeslope, footslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, concave

*Hydric soil rating:* No

## 17A—Wasepi sandy loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 6bh0

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Wasepi and similar soils:* 94 percent

*Minor components:* 6 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Wasepi

#### Setting

*Landform:* Flats on outwash plains, drainageways on outwash plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy supraglacial till over sandy and gravelly glaciofluvial deposits

#### Typical profile

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 30 inches:* sandy loam

*H3 - 30 to 60 inches:* gravelly sand

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Available water storage in profile:* Low (about 5.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3s

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* No



## Minor Components

### Gilford

*Percent of map unit:* 2 percent  
*Landform:* Depressions on outwash plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Matherton

*Percent of map unit:* 2 percent  
*Landform:* Flats on outwash plains, drainageways on outwash plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Granby

*Percent of map unit:* 2 percent  
*Landform:* Depressions on outwash plains, depressions on lake plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

## 18C—Fox sandy loam, Huron Lobe, 6 to 12 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wvh6  
*Elevation:* 660 to 1,250 feet  
*Mean annual precipitation:* 31 to 40 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 145 to 175 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Fox and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Fox

#### Setting

*Landform:* Moraines, outwash plains, ice-contact slopes  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Loamy till over sandy and gravelly outwash

## Custom Soil Resource Report

### Typical profile

*Ap* - 0 to 9 inches: sandy loam  
*Bt1* - 9 to 27 inches: sandy clay loam  
*Bt2* - 27 to 33 inches: gravelly loam  
*2C* - 33 to 79 inches: stratified gravelly sand

### Properties and qualities

*Slope*: 6 to 12 percent  
*Depth to restrictive feature*: 20 to 40 inches to strongly contrasting textural stratification  
*Natural drainage class*: Well drained  
*Runoff class*: Medium  
*Capacity of the most limiting layer to transmit water (Ksat)*: Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table*: More than 80 inches  
*Frequency of flooding*: None  
*Frequency of ponding*: None  
*Calcium carbonate, maximum in profile*: 55 percent  
*Salinity, maximum in profile*: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile*: Low (about 5.5 inches)

### Interpretive groups

*Land capability classification (irrigated)*: None specified  
*Land capability classification (nonirrigated)*: 3e  
*Hydrologic Soil Group*: B  
*Hydric soil rating*: No

### Minor Components

#### Matherton

*Percent of map unit*: 6 percent  
*Landform*: Drainageways, stream terraces  
*Landform position (two-dimensional)*: Footslope  
*Landform position (three-dimensional)*: Head slope  
*Down-slope shape*: Linear  
*Across-slope shape*: Concave  
*Hydric soil rating*: No

#### Sebewa

*Percent of map unit*: 4 percent  
*Landform*: Depressions  
*Landform position (two-dimensional)*: Toeslope  
*Landform position (three-dimensional)*: Base slope  
*Down-slope shape*: Linear  
*Across-slope shape*: Concave  
*Hydric soil rating*: Yes

## 20B—Glynwood loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* 2v4bq

*Elevation:* 700 to 1,060 feet

*Mean annual precipitation:* 34 to 38 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Glynwood and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Glynwood

#### Setting

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Shoulder, backslope, summit

*Landform position (three-dimensional):* Side slope, crest, nose slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Parent material:* Wisconsin till derived from limestone and shale

#### Typical profile

*Ap - 0 to 9 inches:* loam

*Bt - 9 to 31 inches:* clay

*BC - 31 to 35 inches:* clay loam

*Cd - 35 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 6 percent

*Depth to restrictive feature:* 28 to 45 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 5.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

**Minor Components**

**Rawson**

*Percent of map unit:* 6 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Shoulder, summit, backslope

*Landform position (three-dimensional):* Side slope, crest, nose slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

**Blount**

*Percent of map unit:* 5 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Summit, backslope, footslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

**Pewamo**

*Percent of map unit:* 4 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

**20C—Glynwood loam, 6 to 12 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 6bh6

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Farmland of local importance

**Map Unit Composition**

*Glynwood and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Glynwood**

**Setting**

*Landform:* Hills on till plains, hills on moraines

## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit

*Landform position (three-dimensional):* Base slope, side slope, nose slope, head slope, interfluvium, crest

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy ablation till

### Typical profile

*H1 - 0 to 12 inches:* loam

*H2 - 12 to 31 inches:* clay

*H3 - 31 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 6 to 12 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Moderately well drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* Moderate (about 7.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

### Minor Components

#### Metea

*Percent of map unit:* 3 percent

*Landform:* Hills on moraines

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

*Landform position (three-dimensional):* Interfluvium, head slope, nose slope, side slope, crest, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Houghton

*Percent of map unit:* 2 percent

*Landform:* Depressions on outwash plains, depressions on till plains, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

#### Adrian

*Percent of map unit:* 2 percent

## Custom Soil Resource Report

*Landform:* Depressions on outwash plains, depressions on till plains, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

### **Brookston**

*Percent of map unit:* 2 percent

*Landform:* Till plains, depressions on lake plains, depressions on moraines, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

### **Blount**

*Percent of map unit:* 2 percent

*Landform:* Flats on moraines, flats on lake plains, drainageways on lake plains, drainageways on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Lenawee**

*Percent of map unit:* 2 percent

*Landform:* Depressions on moraines, till plains, depressions on lake plains, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

### **Marlette**

*Percent of map unit:* 2 percent

*Landform:* Hills on moraines

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

*Landform position (three-dimensional):* Interfluv, head slope, nose slope, side slope, crest, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### 33—Lenawee silty clay loam, 0 to 1 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2wcf7  
*Elevation:* 560 to 980 feet  
*Mean annual precipitation:* 28 to 38 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 135 to 230 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Lenawee and similar soils:* 93 percent  
*Minor components:* 7 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Lenawee

##### Setting

*Landform:* Lakebeds (relict)  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey glaciolacustrine deposits

##### Typical profile

*Ap - 0 to 9 inches:* silty clay loam  
*Bg - 9 to 39 inches:* silty clay loam  
*Cg - 39 to 80 inches:* silty clay loam

##### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to low (0.00 to 0.01 in/hr)  
*Depth to water table:* About 0 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 21 percent  
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.6 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.0 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* Yes

## Minor Components

### Del rey

*Percent of map unit:* 7 percent  
*Landform:* Lakebeds (relict)  
*Microfeatures of landform position:* Rises  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

## 40A—Udorthents, loamy, nearly level

### Map Unit Setting

*National map unit symbol:* 6bhq  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Udorthents and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Udorthents

#### Setting

*Landform:* Moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy ablation till

#### Typical profile

*H1 - 0 to 60 inches:* sandy clay loam

#### Properties and qualities

*Slope:* 0 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 9.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified



## Custom Soil Resource Report

*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: B*  
*Hydric soil rating: No*

### 40C—Udorthents, loamy, rolling

#### Map Unit Setting

*National map unit symbol: 6bhr*  
*Elevation: 660 to 980 feet*  
*Mean annual precipitation: 35 to 40 inches*  
*Mean annual air temperature: 50 to 55 degrees F*  
*Frost-free period: 155 to 180 days*  
*Farmland classification: Not prime farmland*

#### Map Unit Composition

*Udorthents and similar soils: 100 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Udorthents

##### Setting

*Landform: Moraines*  
*Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit*  
*Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium*  
*Down-slope shape: Linear*  
*Across-slope shape: Convex*  
*Parent material: Loamy ablation till*

##### Typical profile

*H1 - 0 to 60 inches: sandy clay loam*

##### Properties and qualities

*Slope: 6 to 12 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Natural drainage class: Well drained*  
*Runoff class: Medium*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Available water storage in profile: Moderate (about 9.0 inches)*

##### Interpretive groups

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 4e*  
*Hydrologic Soil Group: B*  
*Hydric soil rating: No*

## **41B—Aquents, sandy, loamy, undulating**

### **Map Unit Setting**

*National map unit symbol:* 6bhs  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Aquents and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Aquents**

#### **Setting**

*Landform:* Outwash plains, depressions  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy glaciofluvial deposits

#### **Typical profile**

*H1 - 0 to 60 inches:* sand

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)  
*Depth to water table:* About 0 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Available water storage in profile:* Low (about 5.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* Yes

## 44C—Riddles sandy loam, 6 to 12 percent slopes

### Map Unit Setting

*National map unit symbol:* 6bhx

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Riddles and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Riddles

#### Setting

*Landform:* Hills on moraines

*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy ablation till

#### Typical profile

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 46 inches:* sandy clay loam

*H3 - 46 to 60 inches:* sandy loam

#### Properties and qualities

*Slope:* 6 to 12 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Hydric soil rating:* No

## Minor Components

### Metamora

*Percent of map unit:* 4 percent

*Landform:* Drainageways on till plains, drainageways on moraines, flats on till plains, flats on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### Capac

*Percent of map unit:* 2 percent

*Landform:* Drainageways on till plains, drainageways on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### Brookston

*Percent of map unit:* 2 percent

*Landform:* Depressions on lake plains, depressions on till plains, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, talus

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

### Houghton

*Percent of map unit:* 2 percent

*Landform:* Depressions on outwash plains, depressions on till plains, depressions on moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope, dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

## 48—Gilford sandy loam, till plain, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2t6mq

*Elevation:* 660 to 1,250 feet

*Mean annual precipitation:* 32 to 40 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 145 to 170 days

*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Gilford and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Gilford

#### Setting

*Landform:* Glacial drainage channels, glacial drainage channels

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave, linear

*Parent material:* Coarse-loamy drift over sandy and gravelly outwash

#### Typical profile

*Ap - 0 to 11 inches:* sandy loam

*Bg - 11 to 30 inches:* sandy loam

*BCg - 30 to 35 inches:* loamy sand

*Cg - 35 to 79 inches:* gravelly sand

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 6.00 in/hr)

*Depth to water table:* About 0 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum in profile:* 26 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 1.0

*Available water storage in profile:* Low (about 5.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* Yes

### Minor Components

#### Rensselaer

*Percent of map unit:* 7 percent

*Landform:* Depressions on glacial drainage channels

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Brady

*Percent of map unit:* 5 percent

*Landform:* Glacial drainage channels, glacial drainage channels  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Adrian**

*Percent of map unit:* 3 percent  
*Landform:* Depressions on glacial drainage channels, depressions on glacial drainage channels  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* Yes

**49—Cohoctah fine sandy loam**

**Map Unit Setting**

*National map unit symbol:* 6bj6  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Cohoctah and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Cohoctah**

**Setting**

*Landform:* Flood plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy and/or sandy alluvium

**Typical profile**

*H1 - 0 to 11 inches:* fine sandy loam  
*H2 - 11 to 48 inches:* sandy loam  
*H3 - 48 to 60 inches:* gravelly sand

**Properties and qualities**

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Very low

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* About 0 inches

*Frequency of flooding:* Frequent

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum in profile:* 25 percent

*Available water storage in profile:* Moderate (about 8.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 5w

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* Yes

## 50B—Udipsamments, undulating

### Map Unit Setting

*National map unit symbol:* 6bj7

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Udipsamments and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Udipsamments

#### Setting

*Landform:* Outwash plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Sandy glaciofluvial deposits

#### Typical profile

*H1 - 0 to 60 inches:* sand

#### Properties and qualities

*Slope:* 0 to 6 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Excessively drained

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

**50D—Udipsamments, rolling to steep**

**Map Unit Setting**

*National map unit symbol:* 6bj8

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Udipsamments and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Udipsamments**

**Setting**

*Landform:* Outwash terraces

*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Convex, linear

*Across-slope shape:* Concave, convex

*Parent material:* Sandy glaciofluvial deposits

**Typical profile**

*H1 - 0 to 60 inches:* sand

**Properties and qualities**

*Slope:* 6 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Excessively drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

*Hydric soil rating:* No



## **56A—Urban land-Blount-Lenawee complex, 0 to 3 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bjg  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Urban land:* 65 percent  
*Blount and similar soils:* 20 percent  
*Lenawee and similar soils:* 10 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Blount**

#### **Setting**

*Landform:* Flats on lake plains, knolls on moraines, drainageways on lake plains, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy ablation till

#### **Typical profile**

*H1 - 0 to 7 inches:* loam  
*H2 - 7 to 30 inches:* clay  
*H3 - 30 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)  
*Depth to water table:* About 12 to 36 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* Moderate (about 7.9 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Description of Lenawee

### Setting

*Landform:* Depressions on till plains, depressions on till-floored lake plains, depressions on moraines

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey glaciolacustrine deposits

### Typical profile

*H1 - 0 to 9 inches:* silty clay loam

*H2 - 9 to 33 inches:* silty clay loam

*H3 - 33 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 0 to 1 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* About 0 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum in profile:* 25 percent

*Available water storage in profile:* High (about 11.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 5w

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* Yes

## Minor Components

### Glynwood

*Percent of map unit:* 3 percent

*Landform:* Knolls on till plains, knolls on moraines

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### Aquents

*Percent of map unit:* 2 percent

*Landform:* Depressions

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

## **60B—Urban land-Marlette complex, 0 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bjj  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Urban land:* 65 percent  
*Marlette and similar soils:* 25 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Marlette**

#### **Setting**

*Landform:* Knolls on moraines, flats on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy ablation till

#### **Typical profile**

*H1 - 0 to 8 inches:* sandy loam  
*H2 - 8 to 22 inches:* clay loam  
*H3 - 22 to 31 inches:* clay loam  
*H4 - 31 to 60 inches:* loam

#### **Properties and qualities**

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 30 to 72 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

**Minor Components**

**Capac**

*Percent of map unit:* 3 percent  
*Landform:* Drainageways on till plains, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Metamora**

*Percent of map unit:* 3 percent  
*Landform:* Flats on moraines, drainageways on till plains, drainageways on moraines, flats on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Kibbie**

*Percent of map unit:* 2 percent  
*Landform:* Flats on moraines, drainageways on moraines, drainageways on outwash deltas on moraines, flats on outwash deltas on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Selfridge**

*Percent of map unit:* 2 percent  
*Landform:* Flats on moraines, drainageways on moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**60C—Urban land-Marlette complex, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 6bjk  
*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Urban land:* 65 percent  
*Marlette and similar soils:* 25 percent  
*Minor components:* 10 percent

## Custom Soil Resource Report

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Marlette

#### Setting

*Landform:* Hills on moraines

*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy ablation till

#### Typical profile

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 22 inches:* loam

*H3 - 22 to 31 inches:* clay loam

*H4 - 31 to 60 inches:* loam

#### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* High (about 9.8 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Capac

*Percent of map unit:* 3 percent

*Landform:* Drainageways on moraines, drainageways on till plains

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Metamora

*Percent of map unit:* 3 percent

*Landform:* Drainageways on moraines, flats on till plains, flats on moraines, drainageways on till plains

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Kibbie**

*Percent of map unit:* 2 percent

*Landform:* Flats on lake plains, flats on moraines, drainageways on moraines, drainageways on lake plains

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Selfridge**

*Percent of map unit:* 2 percent

*Landform:* Flats on moraines, drainageways on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

## **61A—Urban land-Capac complex, 0 to 3 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bjm

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Urban land:* 60 percent

*Capac and similar soils:* 20 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Capac**

#### **Setting**

*Landform:* Drainageways on till plains, drainageways on moraines

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Loamy ablation till

#### **Typical profile**

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 32 inches:* clay loam

*H3 - 32 to 60 inches:* loam

**Properties and qualities**

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* High (about 9.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2w

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

**Minor Components**

**Brookston**

*Percent of map unit:* 8 percent

*Landform:* Depressions on till plains, depressions on moraines, depressions on lake plains

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

**Houghton**

*Percent of map unit:* 6 percent

*Landform:* Depressions on till plains, depressions on moraines, depressions on outwash plains

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

**Gilford**

*Percent of map unit:* 6 percent

*Landform:* Drainageways on till plains

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

## **62B—Urban land-Spinks complex, 0 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bjn

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Urban land:* 60 percent

*Spinks and similar soils:* 30 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Spinks**

#### **Setting**

*Landform:* Knolls on moraines, knolls on outwash plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Sandy and/or loamy glaciofluvial deposits

#### **Typical profile**

*H1 - 0 to 9 inches:* loamy sand

*H2 - 9 to 26 inches:* sand

*H3 - 26 to 60 inches:* loamy sand

#### **Properties and qualities**

*Slope:* 0 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.2 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 3s

*Land capability classification (nonirrigated):* 3s

*Hydrologic Soil Group:* A

*Hydric soil rating:* No



**Minor Components**

**Thetford**

*Percent of map unit:* 3 percent

*Landform:* Drainageways on lake plains, drainageways on outwash plains, flats on lake plains, flats on outwash plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Selfridge**

*Percent of map unit:* 3 percent

*Landform:* Flats on moraines, drainageways on moraines

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Riddles**

*Percent of map unit:* 3 percent

*Landform:* Knolls on moraines

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Wasepi**

*Percent of map unit:* 1 percent

*Landform:* Flats on outwash plains, drainageways on outwash plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**62C—Urban land-Spinks complex, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 6bjp

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Urban land:* 60 percent

*Spinks and similar soils:* 30 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Spinks

### Setting

*Landform:* Hills on moraines, hills on outwash plains

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope, toeslope

*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Sandy and/or loamy glaciofluvial deposits

### Typical profile

*H1 - 0 to 9 inches:* loamy sand

*H2 - 9 to 26 inches:* sand

*H3 - 26 to 60 inches:* loamy sand

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

## Minor Components

### Selfridge

*Percent of map unit:* 3 percent

*Landform:* Flats on moraines, drainageways on moraines

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### Riddles

*Percent of map unit:* 3 percent

*Landform:* Knolls on moraines

*Landform position (two-dimensional):* Toeslope, footslope, backslope, shoulder, summit

*Landform position (three-dimensional):* Interfluvium, head slope, nose slope, side slope, base slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Thetford**

*Percent of map unit:* 3 percent

*Landform:* Drainageways on lake plains, drainageways on outwash plains, flats on lake plains, flats on outwash plains

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Wasepi**

*Percent of map unit:* 1 percent

*Landform:* Flats on outwash plains, drainageways on outwash plains

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**63A—Urban land-Thetford complex, 0 to 3 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 6bjq

*Elevation:* 660 to 980 feet

*Mean annual precipitation:* 35 to 40 inches

*Mean annual air temperature:* 50 to 55 degrees F

*Frost-free period:* 155 to 180 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Urban land:* 60 percent

*Thetford and similar soils:* 25 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Thetford**

**Setting**

*Landform:* Flats on outwash plains, drainageways on lake plains, drainageways on outwash plains, flats on lake plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Sandy glaciofluvial deposits

**Typical profile**

*H1 - 0 to 9 inches:* loamy fine sand

*H2 - 9 to 20 inches:* loamy fine sand

*H3 - 20 to 45 inches:* loamy sand

*H4 - 45 to 60 inches:* sand

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 4.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* No

**Minor Components**

**Houghton**

*Percent of map unit:* 5 percent  
*Landform:* Depressions on outwash plains, depressions on till plains, depressions on moraines  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

**Granby**

*Percent of map unit:* 5 percent  
*Landform:* Depressions on outwash plains, depressions on lake plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

**Adrian**

*Percent of map unit:* 5 percent  
*Landform:* Depressions on moraines, depressions on outwash plains, depressions on till plains  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

**67B—Ormas loamy sand, 0 to 6 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 6bjr

## Custom Soil Resource Report

*Elevation:* 660 to 980 feet  
*Mean annual precipitation:* 35 to 40 inches  
*Mean annual air temperature:* 50 to 55 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Ormas and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ormas

#### Setting

*Landform:* Knolls on ice-contact slopes  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Sandy and/or loamy supraglacial till over sandy and gravelly glaciofluvial deposits

#### Typical profile

*H1 - 0 to 9 inches:* loamy sand  
*H2 - 9 to 32 inches:* sand  
*H3 - 32 to 43 inches:* gravelly sandy clay loam  
*H4 - 43 to 60 inches:* gravelly sand

#### Properties and qualities

*Slope:* 0 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 25 percent  
*Available water storage in profile:* Low (about 4.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

### Minor Components

#### Matherton

*Percent of map unit:* 4 percent  
*Landform:* Flats on ice-contact slopes, drainageways on ice-contact slopes  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Brookston**

*Percent of map unit:* 2 percent

*Landform:* Depressions on lake plains, depressions on till plains, depressions on ice-contact slopes

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

**Wasepi**

*Percent of map unit:* 2 percent

*Landform:* Flats on ice-contact slopes, drainageways on ice-contact slopes

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Selfridge**

*Percent of map unit:* 2 percent

*Landform:* Flats on till plains, drainageways on till plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

**BntadB—Blount loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2ydcv

*Elevation:* 660 to 1,130 feet

*Mean annual precipitation:* 31 to 39 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* Prime farmland if drained

**Map Unit Composition**

*Blount and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Blount**

**Setting**

*Landform:* End moraines, ground moraines

*Landform position (two-dimensional):* Footslope, summit

*Landform position (three-dimensional):* Interfluv

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear

*Parent material:* Wisconsin till derived from limestone and shale

**Typical profile**

*Ap* - 0 to 9 inches: loam  
*Bt* - 9 to 30 inches: silty clay  
*BC* - 30 to 37 inches: clay loam  
*Cd* - 37 to 79 inches: clay loam

**Properties and qualities**

*Slope*: 0 to 4 percent  
*Depth to restrictive feature*: 26 to 48 inches to densic material  
*Natural drainage class*: Somewhat poorly drained  
*Runoff class*: Very high  
*Capacity of the most limiting layer to transmit water (Ksat)*: Low to moderately high (0.01 to 0.20 in/hr)  
*Depth to water table*: About 6 to 12 inches  
*Frequency of flooding*: None  
*Frequency of ponding*: None  
*Calcium carbonate, maximum in profile*: 35 percent  
*Salinity, maximum in profile*: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile*: Low (about 5.5 inches)

**Interpretive groups**

*Land capability classification (irrigated)*: None specified  
*Land capability classification (nonirrigated)*: 2w  
*Hydrologic Soil Group*: D  
*Hydric soil rating*: No

**Minor Components**

**Glynwood**

*Percent of map unit*: 6 percent  
*Landform*: Ground moraines, end moraines  
*Landform position (two-dimensional)*: Shoulder, backslope, summit  
*Landform position (three-dimensional)*: Side slope, nose slope, crest  
*Down-slope shape*: Convex, linear  
*Across-slope shape*: Linear, convex  
*Hydric soil rating*: No

**Pewamo**

*Percent of map unit*: 6 percent  
*Landform*: Ground moraines, depressions  
*Landform position (two-dimensional)*: Toeslope  
*Landform position (three-dimensional)*: Base slope  
*Down-slope shape*: Linear  
*Across-slope shape*: Concave  
*Hydric soil rating*: Yes

**Conover**

*Percent of map unit*: 6 percent  
*Landform*: Ground moraines, end moraines  
*Landform position (two-dimensional)*: Summit, footslope  
*Landform position (three-dimensional)*: Interfluvium  
*Down-slope shape*: Linear, concave  
*Across-slope shape*: Linear  
*Hydric soil rating*: No

## Custom Soil Resource Report

### **Badaxe**

*Percent of map unit:* 2 percent

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Summit, footslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No



## Wayne County, Michigan

### BnB—Boyer loamy sand, 0 to 6 percent slopes

#### Map Unit Setting

*National map unit symbol:* 6bk1  
*Elevation:* 570 to 720 feet  
*Mean annual precipitation:* 28 to 34 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 160 days  
*Farmland classification:* Farmland of local importance

#### Map Unit Composition

*Boyer and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Boyer

##### Setting

*Landform:* Flats on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy and/or sandy over sandy and gravelly glaciofluvial deposits

##### Typical profile

*H1 - 0 to 18 inches:* loamy sand  
*H2 - 18 to 29 inches:* sandy clay loam  
*H3 - 29 to 60 inches:* gravelly loamy sand

##### Properties and qualities

*Slope:* 0 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 25 percent  
*Available water storage in profile:* Low (about 4.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

#### Minor Components

##### Wasepi

*Percent of map unit:* 5 percent  
*Landform:* Drainageways on outwash deltas

## Custom Soil Resource Report

*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **BnC—Boyer loamy sand, 6 to 12 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 2t6l3  
*Elevation:* 700 to 1,250 feet  
*Mean annual precipitation:* 32 to 40 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 120 to 180 days  
*Farmland classification:* Farmland of local importance

#### **Map Unit Composition**

*Boyer and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Boyer**

##### **Setting**

*Landform:* Stream terraces, moraines  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope, riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Loamy outwash and/or sandy outwash over sandy and gravelly outwash

##### **Typical profile**

*Ap - 0 to 9 inches:* loamy sand  
*E - 9 to 17 inches:* loamy sand  
*Bt - 17 to 30 inches:* sandy loam  
*2C - 30 to 79 inches:* stratified coarse sand to gravelly sand to very gravelly sand

##### **Properties and qualities**

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* 20 to 40 inches to strongly contrasting textural stratification  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 40 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 3.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

### Minor Components

#### Oshtemo

*Percent of map unit:* 9 percent

*Landform:* Moraines, stream terraces

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope, riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

#### Spinks

*Percent of map unit:* 6 percent

*Landform:* Moraines, stream terraces

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope, riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

## BntaaA—Blount loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wp2k

*Elevation:* 660 to 1,130 feet

*Mean annual precipitation:* 31 to 39 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Blount and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Blount

#### Setting

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Summit, footslope

*Landform position (three-dimensional):* Interfluvium

## Custom Soil Resource Report

*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear

*Parent material:* Wisconsin till derived from limestone and shale

### Typical profile

*Ap - 0 to 9 inches:* loam

*Bt - 9 to 30 inches:* silty clay

*BC - 30 to 37 inches:* clay loam

*Cd - 37 to 79 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 28 to 48 inches to densic material

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)

*Depth to water table:* About 6 to 12 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 5.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2w

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

### Minor Components

#### Pewamo

*Percent of map unit:* 6 percent

*Landform:* Depressions on ground moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Conover

*Percent of map unit:* 4 percent

*Landform:* End moraines, ground moraines

*Landform position (two-dimensional):* Footslope, summit

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Glynwood

*Percent of map unit:* 3 percent

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Shoulder, backslope, summit

*Landform position (three-dimensional):* Side slope, nose slope, crest

*Down-slope shape:* Convex, linear

## Custom Soil Resource Report

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

### **Badaxe**

*Percent of map unit:* 2 percent

*Landform:* End moraines, ground moraines

*Landform position (two-dimensional):* Footslope, summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

## **Cc—Cohoctah fine sandy loam, frequently flooded**

### **Map Unit Setting**

*National map unit symbol:* 6bk3

*Elevation:* 570 to 720 feet

*Mean annual precipitation:* 28 to 34 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 140 to 160 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Cohoctah and similar soils:* 95 percent

*Minor components:* 5 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Cohoctah**

#### **Setting**

*Landform:* Flood plains, meander scars

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium

#### **Typical profile**

*H1 - 0 to 13 inches:* fine sandy loam

*H2 - 13 to 53 inches:* fine sandy loam

*H3 - 53 to 60 inches:* stratified sand to very gravelly sand

#### **Properties and qualities**

*Slope:* 0 to 1 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* About 0 inches

*Frequency of flooding:* Frequent

*Frequency of ponding:* Frequent

## Custom Soil Resource Report

*Calcium carbonate, maximum in profile:* 25 percent

*Available water storage in profile:* Moderate (about 8.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 5w

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* Yes

### Minor Components

#### Shoals

*Percent of map unit:* 5 percent

*Landform:* Flood plains, meander scars

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## Cu—Cut and fill land

### Map Unit Setting

*National map unit symbol:* 6bk5

*Elevation:* 570 to 720 feet

*Mean annual precipitation:* 28 to 34 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 140 to 160 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Cut and fill land:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Gf—Gilford sandy loam

### Map Unit Setting

*National map unit symbol:* 6bk7

*Elevation:* 570 to 720 feet

*Mean annual precipitation:* 28 to 34 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 140 to 160 days

*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Gilford and similar soils:* 95 percent

*Minor components:* 5 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Gilford

### Setting

*Landform:* Depressions on outwash deltas  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy over sandy glaciofluvial deposits

### Typical profile

*H1 - 0 to 10 inches:* sandy loam  
*H2 - 10 to 25 inches:* sandy loam  
*H3 - 25 to 38 inches:* loamy sand  
*H4 - 38 to 60 inches:* gravelly sand

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* About 0 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 40 percent  
*Available water storage in profile:* Low (about 5.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* Yes

## Minor Components

### Wasepi

*Percent of map unit:* 5 percent  
*Landform:* Drainageways on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## GnB—Glynwood loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* 2v4bq  
*Elevation:* 700 to 1,060 feet  
*Mean annual precipitation:* 34 to 38 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Glynwood and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Glynwood

#### Setting

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Shoulder, backslope, summit

*Landform position (three-dimensional):* Side slope, crest, nose slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Parent material:* Wisconsin till derived from limestone and shale

#### Typical profile

*Ap - 0 to 9 inches:* loam

*Bt - 9 to 31 inches:* clay

*BC - 31 to 35 inches:* clay loam

*Cd - 35 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 6 percent

*Depth to restrictive feature:* 28 to 45 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 5.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

### Minor Components

#### Rawson

*Percent of map unit:* 6 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Shoulder, summit, backslope

*Landform position (three-dimensional):* Side slope, crest, nose slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No



**Blount**

*Percent of map unit:* 5 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Summit, backslope, footslope

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

**Pewamo**

*Percent of map unit:* 4 percent

*Landform:* End moraines on till plains, ground moraines on till plains

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

**MoC—Morley loam, 6 to 12 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2wp25

*Elevation:* 570 to 1,120 feet

*Mean annual precipitation:* 32 to 37 inches

*Mean annual air temperature:* 46 to 50 degrees F

*Frost-free period:* 150 to 175 days

*Farmland classification:* Farmland of local importance

**Map Unit Composition**

*Morley and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Morley**

**Setting**

*Landform:* Moraines

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Nose slope, side slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Wisconsin till

**Typical profile**

*Ap - 0 to 9 inches:* loam

*Bt1 - 9 to 18 inches:* clay

*Bt2 - 18 to 29 inches:* clay

*BC - 29 to 35 inches:* clay loam

*Cd - 35 to 79 inches:* clay loam

**Properties and qualities**

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* 26 to 40 inches to densic material  
*Natural drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

**Minor Components**

**Glynwood**

*Percent of map unit:* 7 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope, nose slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Blount**

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Pewamo**

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## **MoD—Morley loam, 12 to 18 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2wp27  
*Elevation:* 570 to 1,000 feet  
*Mean annual precipitation:* 33 to 35 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 155 to 175 days  
*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Morley and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Morley**

#### **Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Nose slope, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Wisconsin till

#### **Typical profile**

*Ap - 0 to 9 inches:* loam  
*Bt1 - 9 to 18 inches:* clay  
*Bt2 - 18 to 29 inches:* clay  
*BC - 29 to 35 inches:* clay loam  
*Cd - 35 to 79 inches:* clay loam

#### **Properties and qualities**

*Slope:* 12 to 18 percent  
*Depth to restrictive feature:* 26 to 40 inches to densic material  
*Natural drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.6 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group: C*  
*Hydric soil rating: No*

### Minor Components

#### Glynwood

*Percent of map unit: 7 percent*  
*Landform: Moraines*  
*Landform position (two-dimensional): Shoulder, backslope*  
*Landform position (three-dimensional): Side slope, nose slope*  
*Down-slope shape: Linear*  
*Across-slope shape: Convex*  
*Hydric soil rating: No*

#### Blount

*Percent of map unit: 5 percent*  
*Landform: Moraines*  
*Landform position (two-dimensional): Backslope, footslope*  
*Landform position (three-dimensional): Side slope*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

#### Pewamo

*Percent of map unit: 3 percent*  
*Landform: Moraines*  
*Landform position (two-dimensional): Toeslope*  
*Landform position (three-dimensional): Base slope*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Hydric soil rating: Yes*

## OwB—Owosso-Morley complex, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol: 6bkr*  
*Elevation: 570 to 720 feet*  
*Mean annual precipitation: 28 to 34 inches*  
*Mean annual air temperature: 45 to 52 degrees F*  
*Frost-free period: 140 to 160 days*  
*Farmland classification: All areas are prime farmland*

### Map Unit Composition

*Owosso and similar soils: 60 percent*  
*Morley and similar soils: 20 percent*  
*Minor components: 20 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Owosso

### Setting

*Landform:* Flats on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy glaciofluvial deposits over loamy till

### Typical profile

*H1 - 0 to 9 inches:* sandy loam  
*H2 - 9 to 38 inches:* sandy loam  
*H3 - 38 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Available water storage in profile:* Moderate (about 8.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Description of Morley

### Setting

*Landform:* Knolls on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Loamy till

### Typical profile

*H1 - 0 to 8 inches:* loam  
*H2 - 8 to 26 inches:* clay  
*H3 - 26 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)  
*Depth to water table:* About 36 to 72 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

## Custom Soil Resource Report

*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Blount

*Percent of map unit:* 10 percent  
*Landform:* Flats on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Metamora

*Percent of map unit:* 10 percent  
*Landform:* Drainageways on till plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## SpC—Spinks loamy sand, 6 to 12 percent slopes

### Map Unit Setting

*National map unit symbol:* 6bl2  
*Elevation:* 570 to 720 feet  
*Mean annual precipitation:* 28 to 34 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 160 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Spinks and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Spinks

#### Setting

*Landform:* Knolls on strand plains  
*Landform position (two-dimensional):* Summit, backslope, footslope, shoulder, toeslope  
*Landform position (three-dimensional):* Crest, base slope, side slope, nose slope, head slope, interfluvium

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Sandy glaciofluvial deposits

### Typical profile

*H1 - 0 to 10 inches:* loamy sand  
*H2 - 10 to 18 inches:* fine sand  
*H3 - 18 to 55 inches:* fine sand  
*H4 - 55 to 60 inches:* fine sand

### Properties and qualities

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

## Minor Components

### Oakville

*Percent of map unit:* 6 percent  
*Landform:* Flats on strand plains  
*Landform position (two-dimensional):* Toeslope, shoulder, footslope, backslope, summit  
*Landform position (three-dimensional):* Side slope, base slope, crest, interfluvial, head slope, nose slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Thetford

*Percent of map unit:* 4 percent  
*Landform:* Drainageways on strand plains  
*Landform position (two-dimensional):* Toeslope, footslope  
*Landform position (three-dimensional):* Side slope, base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## **ThA—Thetford loamy sand, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bl7

*Elevation:* 570 to 720 feet

*Mean annual precipitation:* 28 to 34 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 140 to 160 days

*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Thetford and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Thetford**

#### **Setting**

*Landform:* Drainageways on strand plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Sandy glaciofluvial deposits

#### **Typical profile**

*H1 - 0 to 10 inches:* loamy sand

*H2 - 10 to 43 inches:* fine sand

*H3 - 43 to 60 inches:* fine sand

#### **Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* A/D

*Hydric soil rating:* No



## Minor Components

### Tedrow

*Percent of map unit:* 3 percent  
*Landform:* Drainageways on strand plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Granby

*Percent of map unit:* 3 percent  
*Landform:* Depressions on strand plains  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Spinks

*Percent of map unit:* 2 percent  
*Landform:* Flats on strand plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Oakville

*Percent of map unit:* 2 percent  
*Landform:* Flats on strand plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## W—Water

### Map Unit Setting

*National map unit symbol:* 6bl8  
*Elevation:* 570 to 720 feet  
*Mean annual precipitation:* 28 to 34 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 160 days  
*Farmland classification:* Not prime farmland

## Minor Components

### Water

*Percent of map unit:* 100 percent  
*Hydric soil rating:* Unranked

## **WaA—Wasepi loamy sand, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 6bl9  
*Elevation:* 570 to 720 feet  
*Mean annual precipitation:* 28 to 34 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 160 days  
*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Wasepi and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Wasepi**

#### **Setting**

*Landform:* Drainageways on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Sandy and gravelly glaciofluvial deposits

#### **Typical profile**

*H1 - 0 to 9 inches:* loamy sand  
*H2 - 9 to 15 inches:* loamy sand  
*H3 - 15 to 28 inches:* gravelly sandy loam  
*H4 - 28 to 60 inches:* gravelly sand

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Available water storage in profile:* Low (about 4.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* No

### **Minor Components**

#### **Gilford**

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Depressions on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* Yes

### Boyer

*Percent of map unit:* 5 percent  
*Landform:* Flats on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## WeA—Wasepi loamy sand, loamy substratum, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 6blb  
*Elevation:* 570 to 720 feet  
*Mean annual precipitation:* 28 to 34 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 160 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

*Wasepi, loamy substratum, and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Wasepi, Loamy Substratum

#### Setting

*Landform:* Outwash deltas on till-floored lake plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Sandy and gravelly glaciofluvial deposits and/or loamy till

#### Typical profile

*H1 - 0 to 9 inches:* loamy sand  
*H2 - 9 to 15 inches:* loamy sand  
*H3 - 15 to 40 inches:* gravelly sand  
*H4 - 40 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

## Custom Soil Resource Report

*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 40 percent  
*Available water storage in profile:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* A/D  
*Hydric soil rating:* No

### Minor Components

#### Wasepi

*Percent of map unit:* 4 percent  
*Landform:* Drainageways on outwash deltas  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Tedrow, loamy substratum

*Percent of map unit:* 3 percent  
*Landform:* Outwash deltas on till-floored lake plains  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Gilford

*Percent of map unit:* 3 percent  
*Landform:* Depressions on outwash deltas  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

## **APPENDIX C**

### ***2023 Sidewalk Program Project Areas***

*City of*  
**Northville**  
*Michigan*

**2023 Sidewalk Program**

House Number	Street	Size 4" (SFT)	Totals (SFT)
945	Coldspring	15x5	75
43761	Dorisa Ct.	8x4	32
315	Debra	4x8	32
765	Novi St.	12x4	48
973	Whitegate	8x5	40
797	Springfield	26.5x5	132.5
1027	Springfield	10.5x5	52.5
244	S. Wing	8x4	32
579	Morgan Ct.	23.5x5	117.5
558	Morgan Circle	5.75x5	28.75
538	Grace	13x4	52
45796	Clement	22x4	88
342	E. Main	15x5	75
20452	S. Lexington Blvd	10x4	40
20440	S. Lexington Blvd	24x4	96
20440	S. Lexington Blvd	9.25x4	37

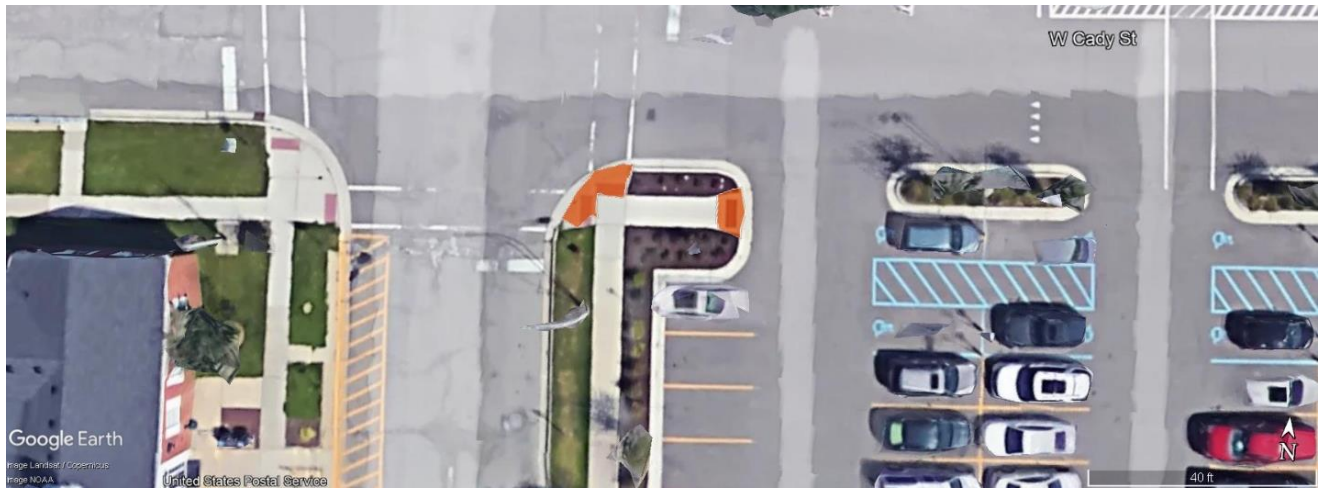
**TOTAL:**  
978.25

# ADA Sidewalk in Downtown

Location	Size 4" (SFT)	Size 6" (SFT)	HC w/ PAD (SFT)
A		45	107.25
B		30	112.75
C	24	32.5	372.25
D			31.5
<b>TOTAL:</b>	<b>24</b>	<b>107.5</b>	<b>632.8</b>

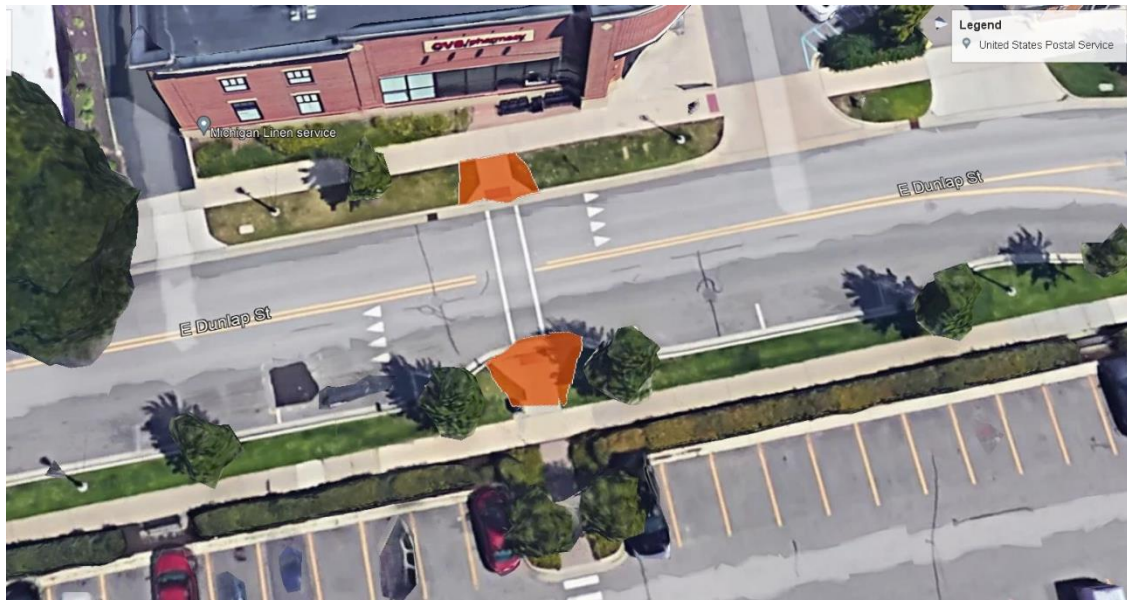


## Location A





## Location B





## Location C





## Location D



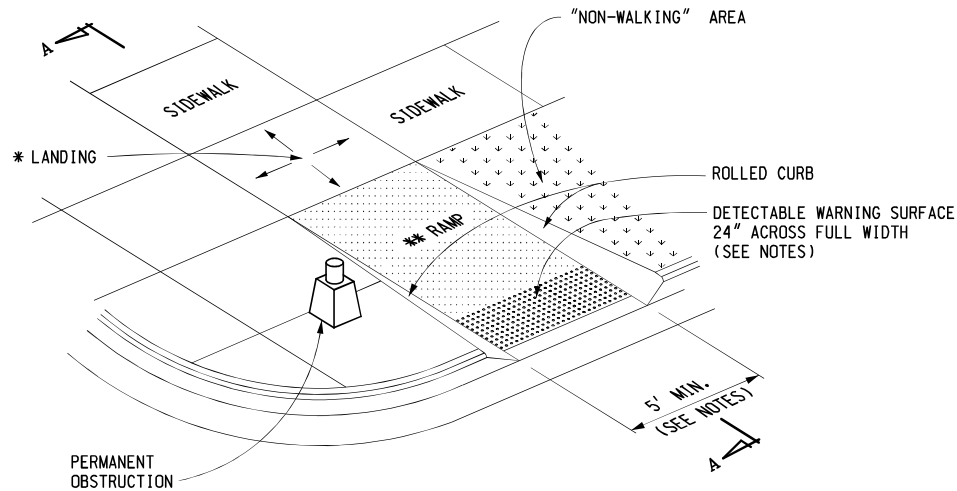
## **APPENDIX D**

### ***MDOT CURB RAMP AND DETECTABLE WARNING DETAILS***

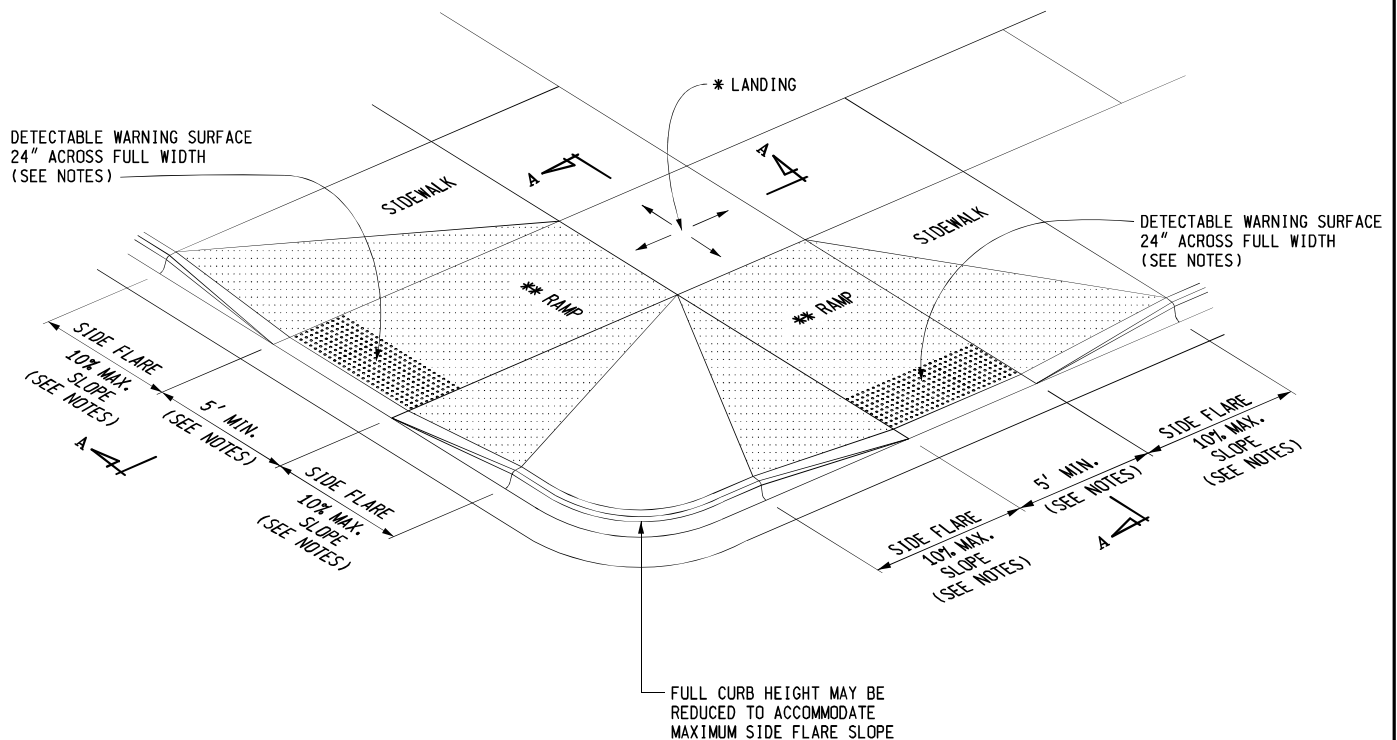
***R-28-J***

\* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

\*\* MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



**CURB RAMP TYPE R**  
(ROLLED SIDES)



**CURB RAMP TYPE F**  
(FLARED SIDES, TWO RAMPS SHOWN)



PREPARED  
BY  
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR  
Paul C. Ajegba

APPROVED BY: Gregg Brunner, P.E. Gregg Brunner  
Oct 14 2021 12:32 PM  
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: Bradley C. Wiefelrich Bradley C. Wiefelrich  
Oct 14 2021 11:01 AM  
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

## CURB RAMP AND DETECTABLE WARNING DETAILS

4-7-2022  
F.H.W.A. APPROVAL

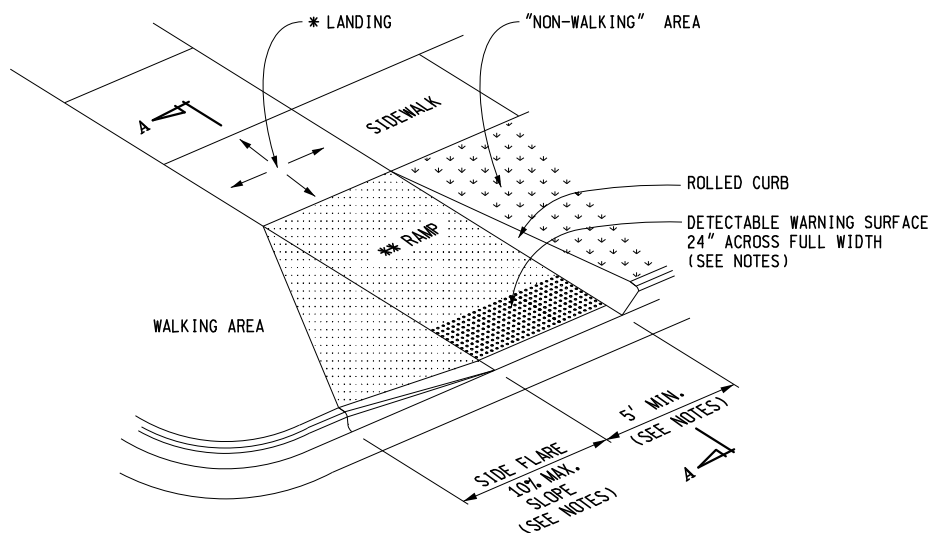
5-8-2020  
PLAN DATE

**R-28-J**

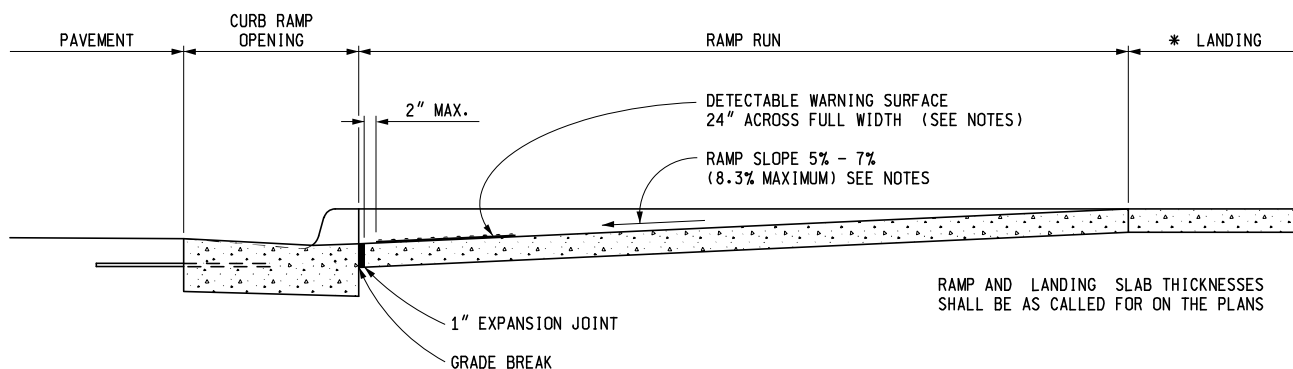
SHEET  
1 OF 7

\* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

\*\* MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



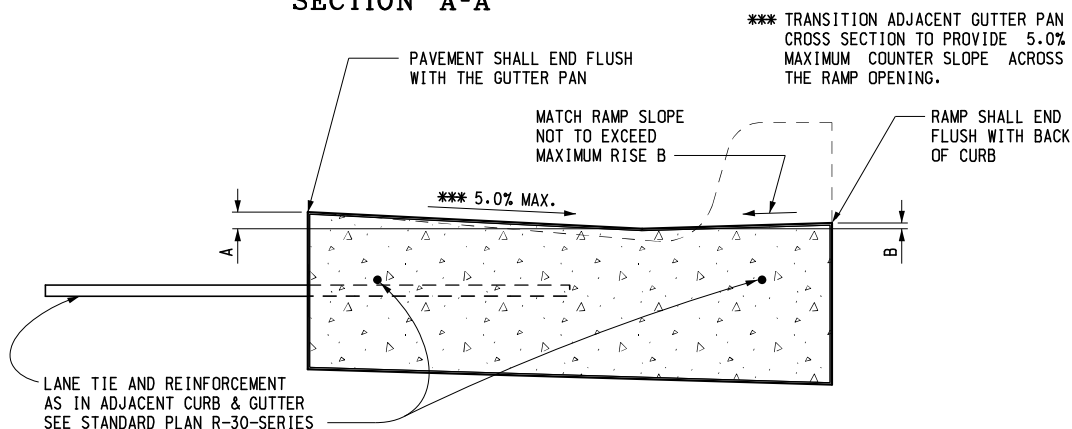
**CURB RAMP TYPE RF**  
(ROLLED / FLARED SIDES)



**SECTION A-A**

CURB TYPE	MAXIMUM RISE (INCHES)	
	A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE  
STANDARD PLAN R-30-SERIES



**SECTION THROUGH CURB RAMP OPENING**  
(TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

# **CURB RAMP AND DETECTABLE WARNING DETAILS**

4-7-2022  
F.H.W.A. APPROVAL

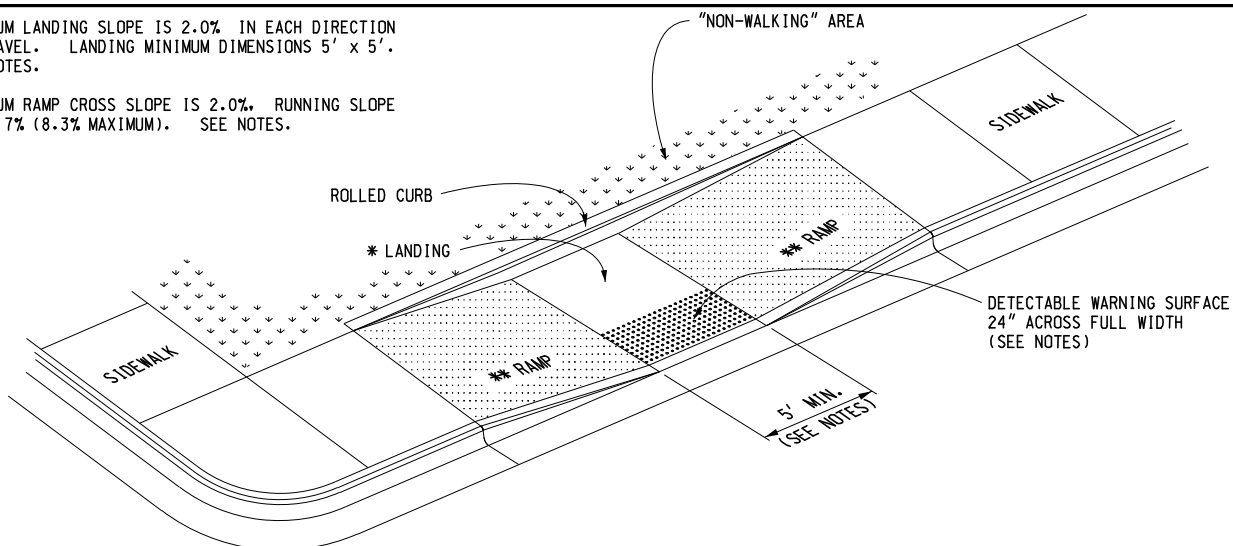
5-8-2020  
PLAN DATE

**R-28-J**

SHEET  
2 OF 7

\* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

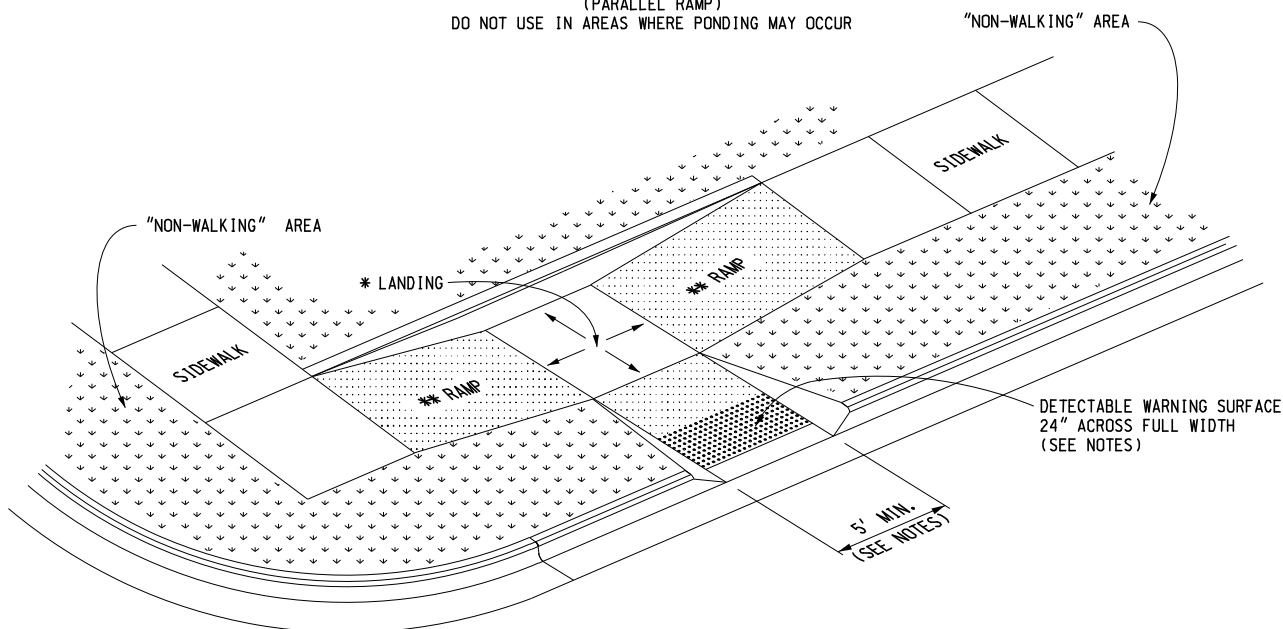
\*\* MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



### CURB RAMP TYPE P

(PARALLEL RAMP)

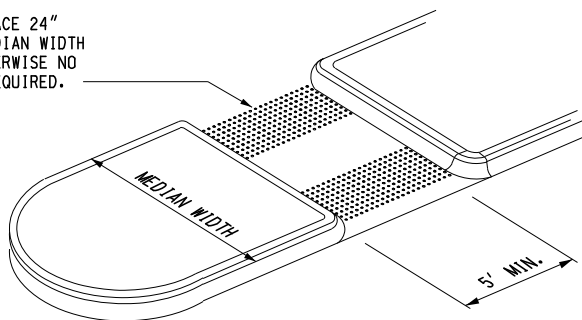
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



### CURB RAMP TYPE C

(COMBINATION RAMP)

DETECTABLE WARNING SURFACE 24" ACROSS FULL WIDTH IF MEDIAN WIDTH IS AT LEAST 6'-0". OTHERWISE NO DETECTABLE WARNING IS REQUIRED.



### CURB RAMP TYPE M

(MEDIAN ISLAND)

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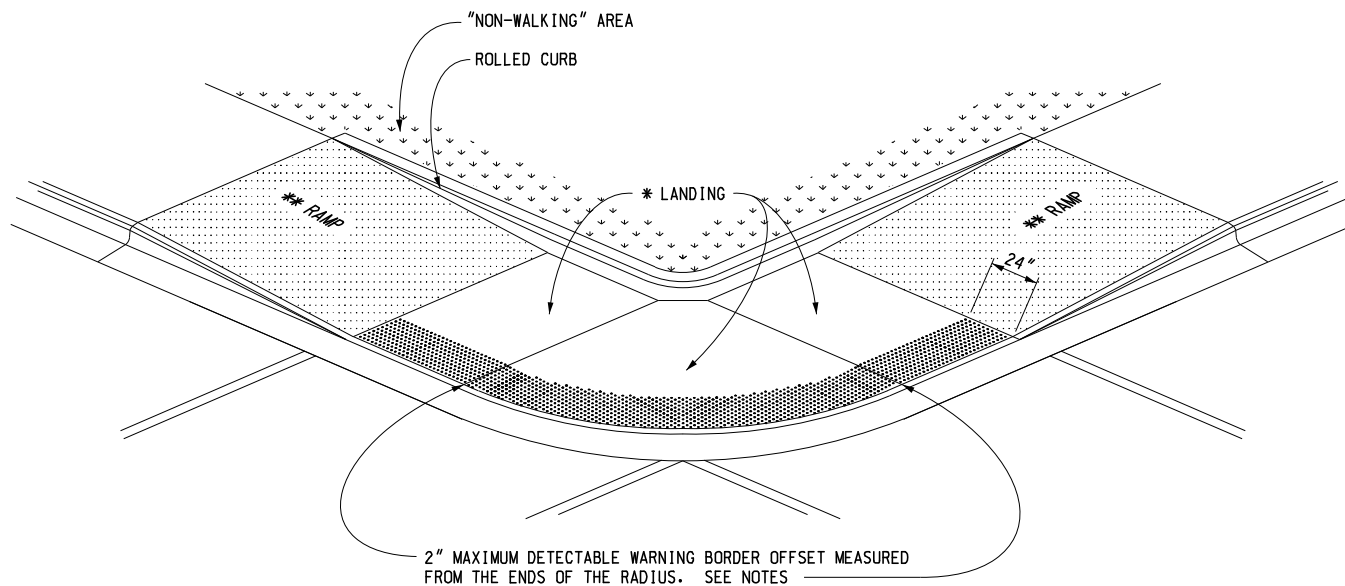
5-8-2020  
PLAN DATE

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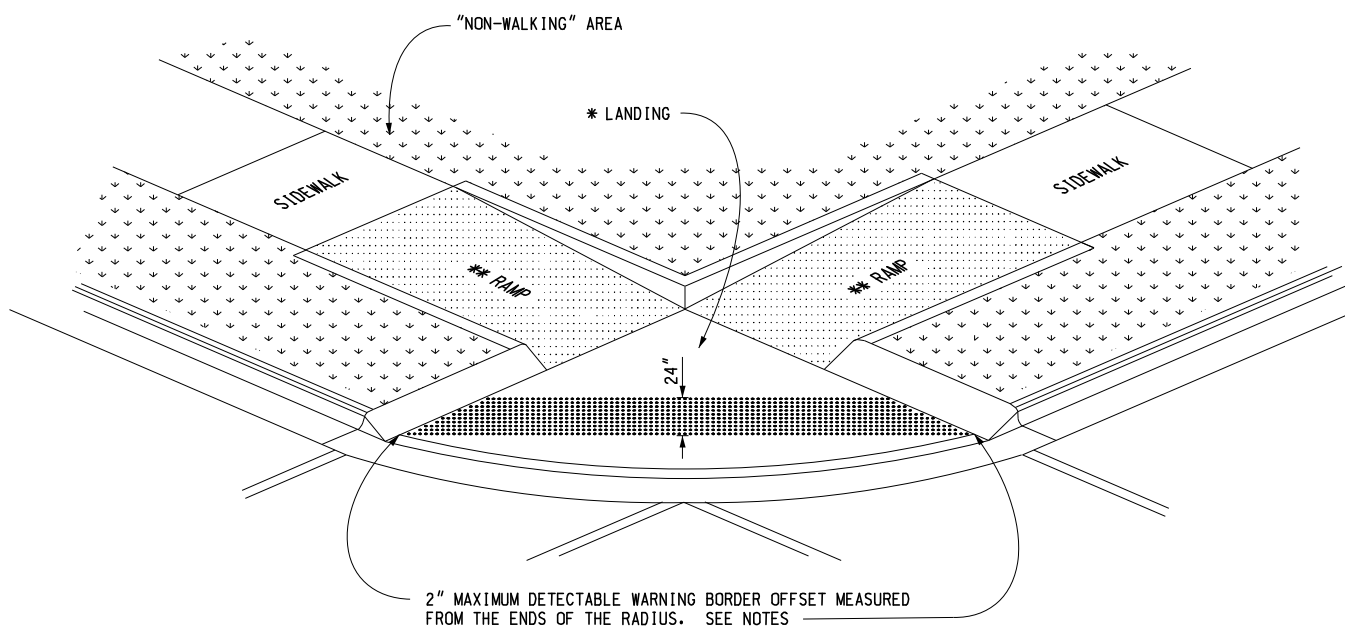
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\* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

\*\* MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



( RADIAL DETECTABLE WARNING SHOWN )



( TANGENT DETECTABLE WARNING SHOWN )

## CURB RAMP TYPE D

(DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

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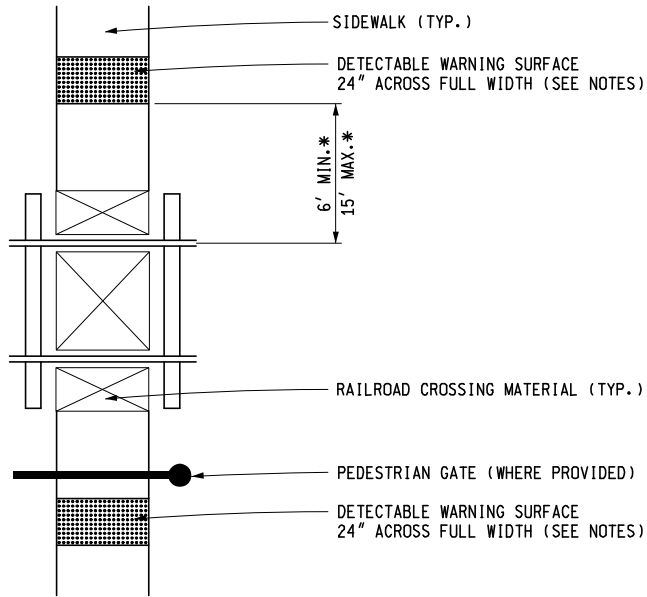
5-8-2020  
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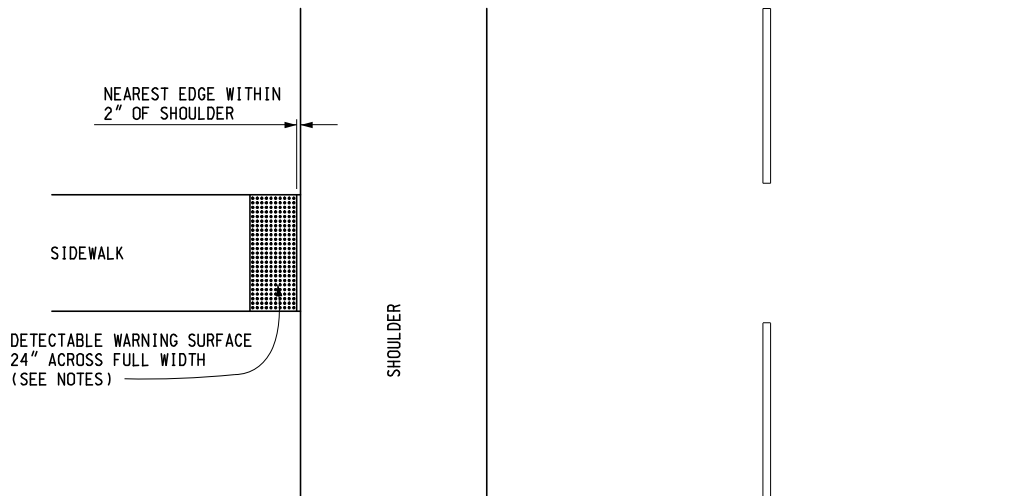
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\* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.



### DETECTABLE WARNING AT RAILROAD CROSSING



### DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

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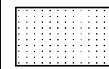
4-7-2022  
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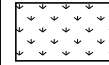
# LEGEND



SLOPED SURFACE



DETECTABLE WARNING



"NON-WALKING" AREA



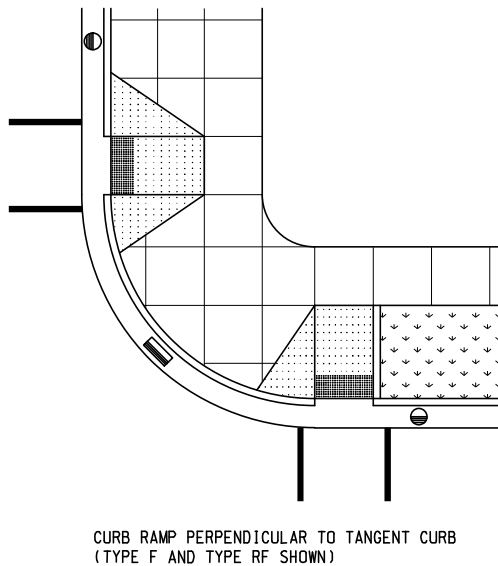
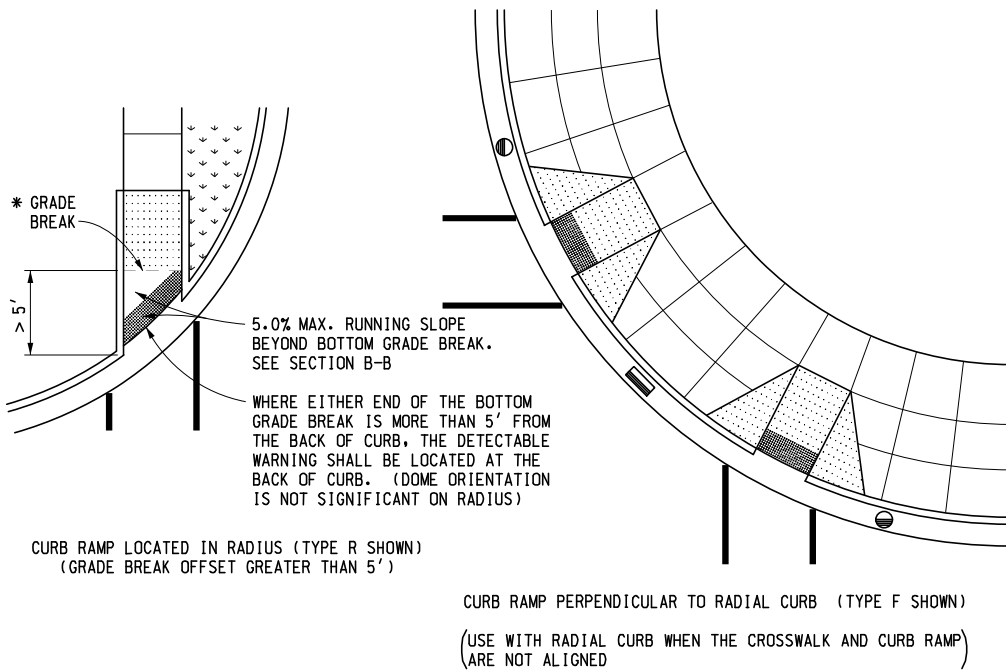
CROSSWALK MARKING



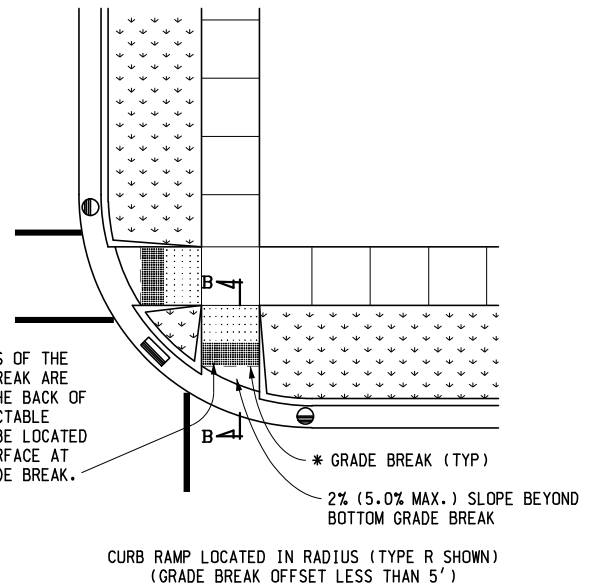
PREFERRED LOCATION OF DRAINAGE INLET (TYP.)



ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)



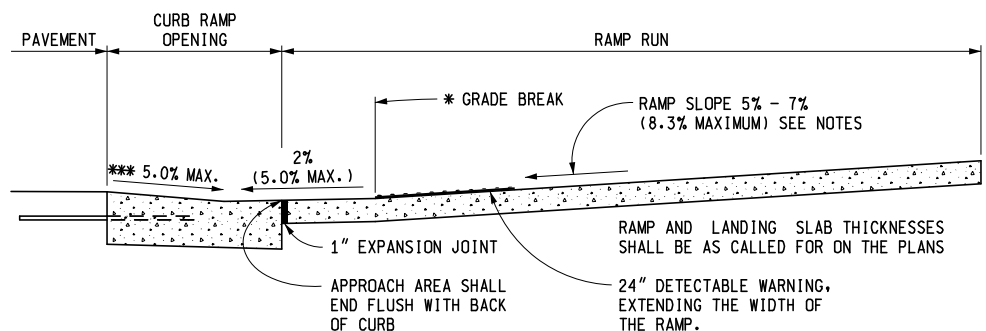
WHERE BOTH ENDS OF THE BOTTOM GRADE BREAK ARE WITHIN 5' OF THE BACK OF CURB, THE DETECTABLE WARNING SHALL BE LOCATED ON THE RAMP SURFACE AT THE BOTTOM GRADE BREAK.



\* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

\*\*\* TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.



## SECTION B-B CURB RAMP ORIENTATION

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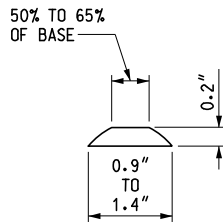
## CURB RAMP AND DETECTABLE WARNING DETAILS

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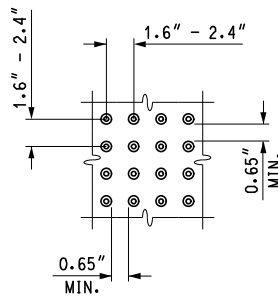
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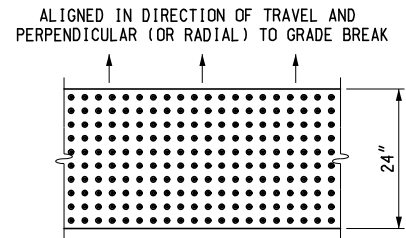
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DOME SECTION



DOME SPACING



DOME ALIGNMENT

## DETECTABLE WARNING DETAILS

### NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

CURB RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

CURB RAMPS WITH A RUNNING SLOPE  $\leq 5\%$  DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN  $\frac{1}{2}$ ". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE CURB RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

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