

**SPECIFICATIONS  
AND  
CONTRACT DOCUMENTS**

**FOR**

**CITY OF GROSSE POINTE WOODS**

**ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER**

**AEW PROJECT NO. 0160-0433**

**DECEMBER 2021**

**OWNER:**

**CITY OF GROSSE POINTE WOODS  
20025 MACK PLAZA  
GROSSE POINTE WOODS, MICHIGAN 48236**

**ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER**

**CITY OF GROSSE POINTE WOODS**

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## ADVERTISEMENT FOR BIDS

### **CITY OF GROSSE POINTE WOODS, MICHIGAN ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER AEW PROJECT NO. 0160-0433**

#### RECEIPT OF BIDS

The City of Grosse Pointe Woods will receive sealed bids until **10:00 am local time on Tuesday, January 11, 2022** at the offices of the City Clerk, City of Grosse Pointe Woods, 20025 Mack Plaza, Grosse Pointe Woods, Michigan 48236 at which time and place all bids will be publicly opened and read aloud.

#### DESCRIPTION OF WORK

The approximate quantities of major items of work involved in this project are as follows:

Curb and Gutter, Conc, Det F2	3,800	Ft
Aggregate Base, 11 inch	5,900	Syd
HMA, 4E1	860	Ton
HMA, 5E1	570	Ton
Driveway, Nonreinf Conc, 6 inch	825	Syd
Pavt, Rem	6,250	Syd
HMA Surface, Rem	4,850	Syd
Station Grading	19	Sta
Pavt Joint and Crack Repr, Det 7, Special	4,000	Ft
Underdrain, Subgrade, 4 inch	3,650	Ft
Dr Structure, 48 inch dia	2	Ea
Dr Structure, 36 inch dia	7	Ea
Dr Structure, 24 inch dia	7	Ea
Sewer, CI IV, 12 inch, Tr Det B	325	Ft

together with related appurtenances as well as clean-up and restoration.

#### PLANS AND SPECIFICATIONS

Plans and specifications will be available on **Tuesday, December 14, 2021**, and must be obtained through [www.bidnetdirect.com](http://www.bidnetdirect.com). An electronic, public viewing copy is available on the City of Grosse Pointe Woods website. Bids may be rejected unless made on the forms included with the bidding documents.

#### BID SECURITY

A certified check, or the included Bid Bond, executed by the bidder and a surety company, payable to the City of Grosse Pointe Woods, in an amount at least equal to five percent (5%) of the bid, shall be submitted with each bid.

#### WITHDRAWAL OF BIDS

No bid may be withdrawn for a period of sixty (60) calendar days after the receipt of bids.

**AWARD OF CONTRACT**

The City of Grosse Pointe Woods reserves the right to reject any or all bids and/or to waive any irregularities in bidding. The successful bidder will be required to furnish satisfactory performance, payment, maintenance and guarantee bonds and insurance certificates.

BY: LISA K. HATHAWAY, MMC  
City Clerk  
City of Grosse Pointe Woods  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236

DATED: DECEMBER 2021

# INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACTS

Prepared by



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## **ARTICLE 1 – DEFINED TERMS**

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

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

## **ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

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

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

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

## **ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five (5) days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. An itemized list of the Bidder's equipment available for use on the proposed Contract.

B. A list of Bidder's key personnel who would be assigned to the Project, including their experience. Additionally, identify the likely project manager and superintendent responsible for making project decisions.

C. A listing of the major parts of the work which are proposed to be sub-let along with reference information for each subcontractor.

D. A proposed construction schedule based upon starting construction within ten (10) days of receiving the Notice to Proceed.

E. Such additional information that will enable the Owner to determine whether or not the Bidder is adequately prepared to fulfill the obligations of the Contract.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

## **ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE**

### **4.01 *Site and Other Areas***

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

### **4.02 *Existing Site Conditions***

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
  - 1. The Supplementary Conditions identify:
    - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
    - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
    - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
    - d. technical data contained in such reports and drawings.
  - 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
  - 3. If the Supplementary Conditions do not identify technical data, the default definition of technical data set forth in Article 1 of the General Conditions will apply.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

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

- A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

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

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

#### 4.05 *Other Work at the Site*

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

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

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

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

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

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

#### **ARTICLE 6 – PRE-BID CONFERENCE**

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

#### **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda, mailed, delivered, sent via facsimile, or transmitted electronically, to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

#### **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5%) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within ten (10) days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and exercise its rights under the Bid Bond. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or the bid acceptance period, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

#### **ARTICLE 9 – CONTRACT TIMES**

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

#### **ARTICLE 10 – LIQUIDATED DAMAGES**

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

#### **ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS**

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

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

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for various portions of the Work.

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, without an increase or Bid Price.

- 12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

## **ARTICLE 13 – PREPARATION OF BID**

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder’s name and official address.

- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

#### **ARTICLE 14 – BASIS OF BID**

##### **14.01 *Lump Sum***

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

##### **14.02 *Unit Price***

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

#### **ARTICLE 15 – SUBMITTAL OF BID**

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to the Owner's office as identified in the Bid Form.

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

#### **ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 17 – OPENING OF BIDS**

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

#### **ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

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

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

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder whose Bid is in the best interests of the Project.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
  - C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.
    - 1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in Calendar Days) times the rate for liquidated damages (in dollars per day).
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

#### **ARTICLE 20 – BONDS AND INSURANCE**

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

#### **ARTICLE 21 – SIGNING OF AGREEMENT**

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

# BID FORM

CITY OF GROSSE POINTE WOODS

ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER

AEW PROJECT NO. 0160-0433

**BID SUBMITTED BY:** \_\_\_\_\_  
Company Name

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**ARTICLE 1 – BID RECIPIENT**

1.01 This Bid is submitted to:

Lisa K. Hathaway, MMC, City Clerk  
City of Grosse Pointe Woods  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236-2397

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

**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

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

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

3.01 In submitting this Bid, Bidder represents that:

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

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

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

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

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

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

- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- K. Bidder is aware that the Owner's decision to proceed with the Project is subject to Owner's determination that all legal, financial and grant approvals, conditions and requirements have been received or met and the funding necessary to complete the project is in hand, and that if all of the foregoing has not been received, the Owner may elect not to proceed with the project in which case no bidder shall have a claim of any kind in contract, tort, equity or otherwise, against the Owner.
- L. Bidders acknowledge that Owner retains the unrestricted right not to proceed with the project and to reject all Bids received. In either case, Owner shall not be liable to any Bidder under any theory including contract, tort, equity or otherwise.
- M. Bidder acknowledges that the unexpected presence and location of existing underground utilities and resulting conflicts with such utilities are ordinarily encountered and generally recognized as inherent in subsurface sewer and appurtenant work in areas that have been previously developed.

## **ARTICLE 4 – BIDDER’S CERTIFICATION**

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
  - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
  - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
  - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

## **ARTICLE 5 – BASIS OF BID (SEE FOLLOWING PAGE)**

**CITY OF GROSSE POINTE WOODS  
ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER  
AEW PROJECT NO. 0160-0433**

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Bid Unit Price</u>	<u>Bid Price</u>
1.	_Reimbursed Permit Fees	1,000	Dlr	\$ <u>1.00</u>	\$ <u>1,000.00</u>
2.	Mobilization, Max 3%	1	LS	<u>                    </u>	<u>                    </u>
3.	Tree, Rem, 19 inch to 36 inch	7	Ea	<u>                    </u>	<u>                    </u>
4.	Tree, Rem, 37 inch or Larger	1	Ea	<u>                    </u>	<u>                    </u>
5.	Tree, Rem, 6 inch to 18 inch	9	Ea	<u>                    </u>	<u>                    </u>
6.	Dr Structure, Rem	17	Ea	<u>                    </u>	<u>                    </u>
7.	Sewer, Rem, Less than 24 inch	325	Ft	<u>                    </u>	<u>                    </u>
8.	Pavt, Rem	6,250	Syd	<u>                    </u>	<u>                    </u>
9.	Sidewalk, Rem	250	Syd	<u>                    </u>	<u>                    </u>
10.	_Station Grading	19	Sta	<u>                    </u>	<u>                    </u>
11.	_Subgrade Undercutting, Modified	250	Cyd	<u>                    </u>	<u>                    </u>
12.	_Subgrade Undercutting, Special	150	Cyd	<u>                    </u>	<u>                    </u>
13.	Erosion Control, Inlet Protection, Fabric Drop	17	Ea	<u>                    </u>	<u>                    </u>
14.	Aggregate Base, 6 inch	110	Syd	<u>                    </u>	<u>                    </u>
15.	Aggregate Base, 11 inch	5,900	Syd	<u>                    </u>	<u>                    </u>
16.	Maintenance Gravel	500	Ton	<u>                    </u>	<u>                    </u>
17.	Sewer, Cl IV, 12 inch, Tr Det B	325	Ft	<u>                    </u>	<u>                    </u>
18.	Sewer, Cl IV, 15 inch, Tr Det B	8	Ft	<u>                    </u>	<u>                    </u>
19.	_Sewer, Sch 40 PVC, 10 inch, Tr Det B	6	Ft	<u>                    </u>	<u>                    </u>
20.	_Sewer Connection, 10 inch	1	Ea	<u>                    </u>	<u>                    </u>
21.	_Sewer Connection, 15 inch	2	Ea	<u>                    </u>	<u>                    </u>
22.	Dr Structure Cover, Adj, Case 1	2	Ea	<u>                    </u>	<u>                    </u>
23.	Dr Structure Cover, Adj, Case 2	2	Ea	<u>                    </u>	<u>                    </u>
24.	Dr Structure, 24 inch dia	7	Ea	<u>                    </u>	<u>                    </u>
25.	Dr Structure, 48 inch dia	2	Ea	<u>                    </u>	<u>                    </u>
26.	_Catch Basin Cover, Restricted, GPW	14	Ea	<u>                    </u>	<u>                    </u>
27.	_Dr Structure, 36 inch dia	7	Ea	<u>                    </u>	<u>                    </u>
28.	_External Structure Wrap, 18 inch	21	Ea	<u>                    </u>	<u>                    </u>

**CITY OF GROSSE POINTE WOODS**  
**ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER**  
**AEW PROJECT NO. 0160-0433**

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Bid Unit Price</u>	<u>Bid Price</u>
29.	_Storm Manhole Cover, GPW	5	Ea	_____	_____
30.	Underdrain, Subgrade, 4 inch	3,650	Ft	_____	_____
31.	_Pop-Up Emitter, Storm Drain, Residential	2	Ea	_____	_____
32.	HMA Surface, Rem	4,850	Syd	_____	_____
33.	HMA, 4E1	860	Ton	_____	_____
34.	HMA, 5E1	570	Ton	_____	_____
35.	Conc Pavt with Integral Curb, Nonreinf, 8 inch	100	Syd	_____	_____
36.	Lane Tie, Epoxy Anchored	50	Ea	_____	_____
37.	Driveway, Nonreinf Conc, 6 inch	825	Syd	_____	_____
38.	Driveway, Nonreinf Conc, 8 inch	75	Syd	_____	_____
39.	Curb and Gutter, Conc, Det F2	3,800	Ft	_____	_____
40.	Driveway Opening, Conc, Det M	100	Ft	_____	_____
41.	Detectable Warning Surface	100	Ft	_____	_____
42.	Sidewalk Ramp, Conc, 4 inch	1,000	Sft	_____	_____
43.	Sidewalk, Conc, 4 inch	120	Sft	_____	_____
44.	Sidewalk, Conc, 6 inch	50	Sft	_____	_____
45.	_Sidewalk Ramp, Conc, 8 inch	1,225	Sft	_____	_____
46.	_Traffic Control, Minor Street	1	LS	_____	_____
47.	_Proposed Trees	20	Ea	_____	_____
48.	Sodding	3,250	Syd	_____	_____
49.	Topsoil Surface, Furn, 3 inch	3,250	Syd	_____	_____
50.	Water, Sodding/Seeding	100	Unit	_____	_____
51.	_Staking First Row of Sod	3,500	Ft	_____	_____
52.	Water Shutoff, Adj, Case 1	1	Ea	_____	_____
53.	_Irrigation Pipe	1,600	Ft	_____	_____
54.	_Sprinkler Head	160	Ea	_____	_____
55.	_Sprinkler Head, Adj	20	Ea	_____	_____

**CITY OF GROSSE POINTE WOODS  
ALLARD AVENUE RECONSTRUCTION – HARPER TO CHESTER  
AEW PROJECT NO. 0160-0433**

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Bid Unit Price</u>	<u>Bid Price</u>
56.	_Audio Visual Record of Construction Area	1	LS	_____	_____
57.	_Rubbish Pickup	1	LS	_____	_____
58.	_Curb and Gutter, Rem, Modified	100	Ft	_____	_____
59.	_Pavt Joint and Crack Repr, Det 7, Special	4,000	Ft	_____	_____
60.	_HMA Surface, Rem, Modified	1,000	Syd	_____	_____
61.	_Hand Patching, Modified	335	Ton	_____	_____
62.	_Curb and Gutter, Conc, Det F2, Modified	100	Ft	_____	_____
<b>Total of All Bid Prices</b>				<b>\$</b>	<b>_____</b>

**ARTICLE 6 – TIME OF COMPLETION**

- 6.01 Bidder agrees that the Work will be substantially complete on or before July 15, 2022 and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before July 30, 2022.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are submitted with and made a condition of this Bid:
  - A. Required Bid security;
  - B. Statement of Qualifications Sheet;
  - C. Subcontractor Listing
  - D. Project References

**ARTICLE 8 – DEFINED TERMS**

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

**ARTICLE 9 – SUBMITTAL**

BIDDER: *[Indicate correct name of bidding entity]*

By: *[Signature]* \_\_\_\_\_

*[Printed name]* \_\_\_\_\_

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

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

Attest: *[Signature]* \_\_\_\_\_

*[Printed name]* \_\_\_\_\_

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

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

\_\_\_\_\_

\_\_\_\_\_

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

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

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

\_\_\_\_\_

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

*(where applicable)*

## BID BOND

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

BIDDER (*Name and Address*):

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

OWNER (*Name and Address*):

City of Grosse Pointe Woods  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236

BID

Bid Due Date:

Description: Allard Avenue Reconstruction – Harper to Chester  
AEW Project No.: 0160-0433

BOND

Bond Number:

Date:

Penal sum \_\_\_\_\_ \$ \_\_\_\_\_  
(Words) (Figures)

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

**BIDDER**

**SURETY**

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

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

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

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

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

*Note: Addresses are to be used for giving any required notice.*

*Provide execution by any additional parties, such as joint venturers, if necessary.*

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

**STATEMENT OF QUALIFICATIONS**

Bidder must answer all questions. If more space is needed to complete a question, attach a separate sheet. Bidder may submit any additional information.

Name: \_\_\_\_\_

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

\_\_\_\_\_

Number of years operating under your present name: \_\_\_\_\_

Bonding Capacity: \_\_\_\_\_

Bonding Company: \_\_\_\_\_ Phone: \_\_\_\_\_

General nature of work performed by your company \_\_\_\_\_

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

**KEY PERSONEL:**

<i>Name</i>	<i>Position</i>	<i>Years Experience</i>	<i>Years with Company</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**MAJOR EQUIPMENT:**

<i>Equipment</i>	<i>Manufacturer</i>	<i>Model No.</i>	<i>No.</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

CURRENT PROJECTS UNDER CONTRACT:

<i>Project Name</i>	<i>Location</i>	<i>Contract Amt</i>	<i>Completion Date</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Additional information that may be pertinent to demonstrate your ability to complete this project.

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

Has your company defaulted on a contract?

\_\_\_\_\_

If yes, where and why?

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

I hereby certify that the above answers are correct and true.

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

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

Number of additional sheets attached \_\_\_\_\_

**SUBCONTRACTOR LISTING**

Bidder agrees to use the following Subcontractors for the performance of the work of their respective trades unless otherwise approved in writing by the Owner prior to signing of the Contract. Bidder is aware of the Subcontract Provisions.

<i><b>PORTION OF WORK</b></i>	<i><b>NAME, ADDRESS &amp; PHONE NO. OF CONTRACTOR</b></i>	<i><b>APPROXIMATE DOLLAR VALUE OF SUBCONTRACT</b></i>
_____	Name: _____ Address: _____	_____
	Phone: _____	
_____	Name: _____ Address: _____	_____
	Phone: _____	
_____	Name: _____ Address: _____	_____
	Phone: _____	
_____	Name: _____ Address: _____	_____
	Phone: _____	
_____	Name: _____ Address: _____	_____
	Phone: _____	
_____	Name: _____ Address: _____	_____
	Phone: _____	

**PROJECT REFERENCES**

Bidder has completed the following projects in the past 5 years of similar size and scope to this project.

Project: _____	Project: _____
Owner: _____	Owner: _____
Contact Person: _____	Contact Person: _____
Phone: _____	Phone: _____
Contract Amount: _____	Contract Amount: _____
Date Completed: _____	Date Completed: _____
Project: _____	Project: _____
Owner: _____	Owner: _____
Contact Person: _____	Contact Person: _____
Phone: _____	Phone: _____
Contract Amount: _____	Contract Amount: _____
Date Completed: _____	Date Completed: _____
Project: _____	Project: _____
Owner: _____	Owner: _____
Contact Person: _____	Contact Person: _____
Phone: _____	Phone: _____
Contract Amount: _____	Contract Amount: _____
Date Completed: _____	Date Completed: _____

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

Prepared by



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

THIS AGREEMENT is by and between City of Grosse Pointe Woods, 20025 Mack Plaza Drive  
Grosse Pointe Woods, Michigan 48236 (“Owner”) and  
\_\_\_\_\_ (“Contractor”).

**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: 0.34 miles of asphalt road reconstruction with concrete curb and gutter as well as storm sewer and other related work. This project includes asphalt patching and concrete joint repair at various locations in the City.

**ARTICLE 2 –THE PROJECT**

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

City of Grosse Pointe Woods  
Allard Avenue Reconstruction – Harper to Chester  
AEW Project No. 0160-0433

**ARTICLE 3 - ENGINEER**

3.01 The Project has been designed by Anderson, Eckstein and Westrick, Inc.

3.02 The Owner has retained Anderson, Eckstein and Westrick, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 - CONTRACT TIMES**

4.01 Time of the Essence

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

4.02 Contract Times: Dates

- A. The Work will be substantially complete on or before July 15, 2022 and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before July 30, 2022.

4.03 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
  1. Substantial Completion: Contractor shall pay Owner \$950.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
  2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$950.00 for each day that expires after such time until the Work is completed and ready for final payment.
  3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

**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.
- B. Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities): \_\_\_\_\_  
\_\_\_\_\_.
- C. The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

## **ARTICLE 6 - PAYMENT PROCEDURES**

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

- A. Engineer shall prepare recommendations for Payment in accordance with Article 15 of the General Conditions.

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

- A. Owner shall make Progress Payments on account of the Contract Price on the basis of Engineer's Recommendation for Payment during performance of the Work as provided in Paragraph 6.02.A.1 below. 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. Ninety (90%) percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

### **6.03 Final Payment**

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

## **ARTICLE 7 - INTEREST**

- 7.01 All amounts not paid when due shall bear interest in accordance with the provisions of Act 524 of the Michigan Public Acts of 1980.

## **ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS**

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

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
- B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions, if any, at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

## **ARTICLE 9 - CONTRACT DOCUMENTS**

### **9.01 Contents**

- A. The Contract Documents consist of the following:
  - 1. This Agreement (pages 1 to 7, inclusive).
  - 2. Performance bond (pages 1 to 3, inclusive).
  - 3. Payment bond (pages 1 to 3, inclusive).
  - 4. Maintenance and Guarantee bond (pages 1 to 2, inclusive).
  - 5. General Conditions (pages 1 to 66, inclusive).
  - 6. Supplementary Conditions (pages 1 to 10, inclusive).

7. Specifications and Work Schedules as listed in the table of contents of the Project Manual.
  8. Drawings (not attached but incorporated by reference) with each sheet bearing the following general title: Allard Avenue Reconstruction – Harper to Chester, AEW Project No. 0160-0433.
  9. Addenda (numbers \_\_ to \_\_ inclusive).
  10. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor’s Bid (pages 1 to 7, inclusive).
  11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    - a. Notice to Proceed.
    - b. Contract Modifications.
    - c. Contract Notifications.
    - d. Work Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

## **ARTICLE 10 – MISCELLANEOUS**

### 10.01 Terms

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

### 10.02 Assignment of Contract

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

### 10.03 Successors and Assigns

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

#### 10.04 Severability

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

#### 10.05 Contractor's Certifications

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of 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.

#### 10.06 Other Provisions

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

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

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

OWNER: CITY OF GROSSE POINTE WOODS

CONTRACTOR:

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

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

Title: Arthur W. Bryant, Mayor

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

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

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

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

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

Title: Frank Schulte, City Administrator

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

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

Address for giving notices:

Approved for Signature:

\_\_\_\_\_

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

\_\_\_\_\_

Title: Lisa Anderson, City Attorney

\_\_\_\_\_

Address for giving notices:

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

*(where applicable)*

City of Grosse Pointe Woods

\_\_\_\_\_

20025 Mack Plaza Drive

Grosse Pointe Woods, Michigan 48236-2397

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

## PERFORMANCE BOND

CONTRACTOR *(name and address):*

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

OWNER *(name and address):*

City of Grosse Pointe Woods  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* Allard Avenue Reconstruction – Harper to Chester  
AEW Project No. 0160-0433

### BOND

Bond Number:

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

Amount:

Modifications to this Bond Form:  None  See Paragraph 16

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

### CONTRACTOR AS PRINCIPAL

### SURETY

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

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

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

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

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### 14. Definitions

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

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

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

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

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

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

16. Modifications to this Bond are as follows:

## PAYMENT BOND

CONTRACTOR *(name and address)*:

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

OWNER *(name and address)*:

City of Grosse Pointe Woods  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: Allard Avenue Reconstruction – Harper to Chester  
AEW Project No. 0160-0433

### BOND

Bond Number:

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

Amount:

Modifications to this Bond Form:  None  See Paragraph 18

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

### CONTRACTOR AS PRINCIPAL

### SURETY

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

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

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

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

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Contractor,
    - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the

Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

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

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

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

## 16. Definitions

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

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
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 shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

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

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

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

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

18. Modifications to this Bond are as follows:

# MAINTENANCE AND GUARANTEE BOND

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

CONTRACTOR (Name and Address):

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

OWNER (Name and Address):

City of Grosse Pointe Wood  
20025 Mack Plaza  
Grosse Pointe Woods, Michigan 48236

## CONTRACT

Date:

Amount:

Description (Name and Location): Allard Avenue Reconstruction – Harper to Chester  
AEW Project No. 0160-0433

## BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Maintenance and Guarantee Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)

Name and Title:

### SURETY

\_\_\_\_\_  
(Seal)

Surety's Name and Corporate Seal

By:

\_\_\_\_\_  
Signature and Title

(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest:

\_\_\_\_\_  
Signature and Title

### CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)

Name and Title:

### SURETY

\_\_\_\_\_  
(Seal)

Surety's Name and Corporate Seal

By:

\_\_\_\_\_  
Signature and Title

(Attach Power of Attorney)

Attest:

\_\_\_\_\_  
Signature and Title:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that by and under said contract, the above named principal has agreed with the said Owner that for a period of **two years** from the date of payment of Final Estimate, to keep in good order and repair any defect in all the work done under said contract either by the principal or his subcontractors, or his material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections, shall also be made good all without expense to the Owner, excepting only such part or parts of said work as may have been disturbed without the consent or approval of the principal after the final acceptance of the work, and that whenever directed so to do by the Owner, by notice serving in writing, either personally or by mail, on the principal at \_\_\_\_\_

---

OR \_\_\_\_\_ its \_\_\_\_\_  
\_\_\_\_\_ legal representatives, or successors, or on the surety  
\_\_\_\_\_ at \_\_\_\_\_

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WILL PROCEED at once to make such repairs as directed by said Owner, and in case of failure to do so within one week from the date of such notice, or within reasonable time not less than one week, as shall be fixed in said notice then the said Owner shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and make such repairs and charge the expense thereof to, and receive same from said principal or surety. If any repair is necessary to be made at once to protect life and property, then and in that case, the said Owner may take immediate steps to repair or barricade such defects without notice to the contractor. In such accounting the said Owner shall not be held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actually paid therefore shall be charged to the principal or surety. In this connection the judgment of said year from the date of payment of Final Estimate, shall keep said work so constructed under said contract in good order and repair, excepting only such part or parts of said work so constructed under said contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said principal after the final acceptance of the same, proceed to make repair as in said notice directed, or shall reimburse said Owner for any expense incurred by making such repairs, should the principal or surety fail to do so as hereinbefore specified, and shall fully indemnify, defend and save harmless the said Owner from all suits and actions for party or parties by or from any of the acts or omissions or through the negligence of said principal, servants, agents, or employees, in the prosecution of the work included in said contract, and from any and all claims arising under Workman's Compensation Act, so-called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

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FOR INFORMATION ONLY – NAME, ADDRESS AND TELEPHONE

---

Surety Agency or Broker

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Owner's Representative (engineer or other party)

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

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

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. **Cut-Off Date - The last date for which constructed work will be considered for compensation in the upcoming Progress Payment. This date will be determined at the Pre-Construction Conference.**
19. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
20. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
21. *Engineer*—The individual or entity named as such in the Agreement.
22. *Field Work 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.
23. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
26. *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.
27. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
28. *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.
29. *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.
30. **Progress Payment – Payments made by the Owner, upon Engineer’s recommendation, to the Contractor for the completed portions of the Work.**
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
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. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
34. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
35. *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.
36. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
37. *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~~ Progress Payment.

38. *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.
39. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
40. *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.
41. *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.
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 thereof.
43. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
47. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
  1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
  1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
  1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
  1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

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

## **ARTICLE 2 – PRELIMINARY MATTERS**

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

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

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

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

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

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

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
2. a preliminary Schedule of Submittals; and
3. a preliminary Schedule of Values (if requested) 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 ~~Application for Payment~~ Progress Payments, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. **Within 10 days following the Pre-Construction Conference, the Contractor shall make any corrections and adjustments and resubmit the schedules. No progress payments shall be made to the Contractor until acceptable schedules are submitted to the Engineer.**
  1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

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

#### **3.01 Intent**

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

#### **3.02 Reference Standards**

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

#### **3.03 Reporting and Resolving Discrepancies**

- A. *Reporting Discrepancies:*
  - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to

applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).
2. **The provisions of the Contract Documents, written and prepared by or for the Engineer shall take the following order of precedence in resolving conflicts, errors, ambiguities, or discrepancies between such provisions of the Contract Documents:**
  - a. **Agreement**
  - b. **Addenda**
  - c. **Special Provisions**
  - d. **Project Plans and Drawings**
  - e. **Standard Detail Sheets**
  - f. **Supplementary Specifications**
  - g. **Standard Specifications**
  - h. **General Requirements**
  - i. **Supplementary Conditions**
  - j. **General Conditions**

### 3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

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

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

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

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

#### 4.02 *Starting the Work*

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

#### 4.03 *Reference Points*

- A. **Owner shall provide engineering surveys to establish reference points, benchmarks, and alignment and grade stakes for construction which, in the Engineer's judgment, are necessary to enable Contractor to proceed with the work. Contractor shall be responsible to preserve and protect the reference points, benchmarks, and alignment and grade stakes during the work. Reference points, benchmarks, and alignment and grade stakes damaged, destroyed, removed, or disturbed by the Contractor will be reestablished by the Engineer at the Contractor's expense.**

#### 4.04 *Progress Schedule*

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

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

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;
  3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

### *5.01 Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. **DELETED**
- 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. **Contractor shall provide written evidence from the Property Owner, allowing the use of additional lands.**

### *5.02 Use of Site and Other Areas*

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

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
  - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
  - D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

### 5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
  3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or

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

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

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

- c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
  - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
3. **“reasonable accuracy,” as referenced in Article 5.05, shall mean that the actual centerline location of the utility is within three (3) feet of the Underground Facility shown on the Plans or marked in the field.**
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer’s Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner’s Statement to Contractor Regarding Underground Facility:* After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
    - c. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times; and

- d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a ~~Change Order~~ Contract Modification.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
  1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
  1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection

with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this

Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

## ARTICLE 6 – BONDS AND INSURANCE

### 6.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. **Contractor shall also furnish maintenance and guarantee bond in an amount at least equal to the Contract Price. The maintenance and guarantee bond shall remain in effect for two years after the date of the final payment.** ~~Contractor shall also furnish each other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.~~
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond. **Additionally, all Surety companies providing bonds as required by the Contract shall have an A.M. Best Rating of A-VII or better.**
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

## 6.02 Insurance—General Provisions

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. ~~Upon request by Owner or any other insured,~~ Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

### 6.03 Contractor's Insurance

- A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
  4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  2. claims for damages insured by reasonably available personal injury liability coverage.
  3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor’s pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor’s operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds*: The Contractor’s commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor’s professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
  2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
  3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
  5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

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

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

#### 6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
  4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
  5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may

come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

#### 6.06 *Waiver of Rights*

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

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

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by ~~Change Order~~ Contract Modification, if needed.

**ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

7.01 *Supervision and Superintendence*

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

7.02 *Labor; Working Hours*

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

Sundays, or legal holidays only with Owner's written consent ~~which will not be unreasonably withheld.~~

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

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

#### 7.04 *"Or Equals"*

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

- 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
  - C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
  - D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
  - E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

#### 7.05 *Substitutes*

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

- b. will state:
    - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
    - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
    - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
  - c. will identify:
    - 1) all variations of the proposed substitute item from that specified, and
    - 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Work Order or a proposed ~~Change Order~~ Contract Modification 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~~ Contract Modification and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner,

except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
  - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
  - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

#### 7.07 *Patent Fees and Royalties*

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

#### 7.08 *Permits*

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

negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

#### 7.09 *Taxes*

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

#### 7.10 *Laws and Regulations*

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

#### 7.11 *Record Documents*

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

#### 7.12 *Safety and Protection*

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

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

#### 7.13 *Safety Representative*

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

#### 7.14 *Hazard Communication Programs*

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

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

#### 7.15 *Emergencies*

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

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

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

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

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

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

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

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

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

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

E. *Resubmittal Procedures:*

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

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  1. observations by Engineer;
  2. recommendation by Engineer or payment by Owner of any progress or final payment;
  3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  4. use or occupancy of the Work or any part thereof by Owner;
  5. any review and approval of a Shop Drawing or Sample submittal;
  6. the issuance of a notice of acceptability by Engineer;
  7. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.

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

#### 7.18 Indemnification

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

#### 7.19 Delegation of Professional Design Services

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

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

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

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

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

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

## 8.02 *Coordination*

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

## 8.03 *Legal Relationships*

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

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

## ARTICLE 9 – OWNER'S RESPONSIBILITIES

### 9.01 *Communications to Contractor*

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

### 9.02 *Replacement of Engineer*

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

### 9.03 *Furnish Data*

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

### 9.04 *Pay When Due*

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

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

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

### 9.06 *Insurance*

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

### 9.07 ~~*Change Orders-Contract Modifications*~~

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

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

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ~~Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work.~~ Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

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

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

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

10.05 *Shop Drawings, ~~Change Orders~~ Contract Modifications and Payments*

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

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

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

Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

#### 10.09 *Compliance with Safety Program*

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

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

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

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

the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

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

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

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

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

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

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order Contract Modification. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

- B. An adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
  2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent **except no fee shall be applied to equipment**;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
    - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 2725 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a ~~Change Order~~ Contract Modification. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions

of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

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

#### 11.07 *Execution of ~~Change Order~~Contract Modifications*

- A. Owner, **Engineer**, and Contractor shall execute appropriate ~~Change Orders~~ Contract Modifications covering:
  - 1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
  4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a ~~Change Order~~ Contract Modification that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *Notification to Surety*

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

### **ARTICLE 12 – CLAIMS**

#### 12.01 *Claims*

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

resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation:*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a ~~Change Order~~ Contract Modification to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

### 13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
2. To determine the value of a ~~Change Order~~ Contract Modification, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of

the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any

such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

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

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any

Work covered by a ~~Change Order~~ Contract Modification, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

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

### 13.02 Allowances

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

### 13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

### **14.01 Access to Work**

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

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

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with ~~inspection and~~ testing personnel to facilitate required inspections and tests. Timely notice shall be deemed as two (2) working days prior to needing inspection and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
  1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  3. by manufacturers of equipment furnished under the Contract Documents;
  4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

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

#### 14.03 *Defective Work*

- A. Contractor's Obligation: It is Contractor's obligation to assure that the Work is not defective.
- B. Engineer's Authority: Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. Notice of Defects: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. Correction, or Removal and Replacement: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. Preservation of Warranties: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. Costs and Damages: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

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

to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

#### 14.05 *Uncovering Work*

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

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

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

#### 14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, **or an unsafe or emergency situation if declared by the Owner**, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and

suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

### **15.01 Progress Payments**

- A. Basis for Progress Payments: The Schedule of Values, if any, established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of ~~Application for Payment~~ acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03 and 15.01B. ~~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~~ Payment Requests:
  1. **On a monthly basis and in accordance with the schedule established at the Preconstruction Conference, the Engineer will prepare a Construction Estimate for the number of units constructed through the Cut-Off Date. If the Contractor requests payment for 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 Contractor shall submit a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.**
  2. **The number of units to be paid on each Construction Estimate will be compiled from the Construction Observer's Daily Reports for the work completed.**
  3. **The amount of retainage with respect to Progress Payments will be as stipulated in the Agreement.**
  4. **Prior to the date established in the Agreement for the progress payments (but not more than once per month), the Engineer will forward to the Owner, with a copy to the Contractor, a Recommendation for Payment accompanied by the Construction Estimate.**
  5. **The Contractor, within 14 days of the receipt of the Recommendation of Payment, shall notify the Engineer in writing of any discrepancies. Within seven days of the receipt of the Contractor's notification, the Engineer and the Contractor shall**

**attempt to resolve the discrepancies. Any corrected units of work will be adjusted on subsequent progress payments.**

C. Review of Applications:

1. **Deleted.**
2. Engineer's recommendation ~~of any for~~ 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~~ payment request and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
  6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
    - a. the Work is defective, requiring correction or replacement;
    - b. the Contract Price has been reduced by ~~Change Orders~~ Contract Modifications;
    - 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. **Thirty (30)** ~~Ten~~ days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.
- E. Reductions in Payment by Owner:
1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
    - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
    - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
    - c. Contractor has failed to provide and maintain required bonds or insurance;
    - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
    - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
    - f. the Work is defective, requiring correction or replacement;
    - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
    - h. the Contract Price has been reduced by ~~Change Orders~~ Contract Modifications;
    - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

- j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - l. **The Contract Price has been reduced to offset expenditure of funds for Construction Observations paid by Owner.**
  - m. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

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

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

#### 15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially

complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, ~~review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner.~~ Unless Owner and Contractor agree otherwise in writing, ~~Owner—Contractor~~ shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities ~~upon Owner's sue of occupancy of the work.~~ until final acceptance 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 Payments~~ payment requests for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
  - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
  - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
  - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

#### 15.05 *Final Inspection*

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

#### 15.06 *Final Payment*

##### A. ~~Application for Payment~~ Request:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The request for final ~~Application for Payment~~ payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
  - d. a list of all disputes that Contractor believes are unsettled; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

##### B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final ~~Application for Payment~~ payment request and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after

receipt of the final ~~Application request~~ for ~~Payment payment~~, indicate in writing Engineer's recommendation of final payment and present the ~~Application for Payment final payment request~~ to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the ~~Application for Payment payment request~~ 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 payment request~~.

- C. Completion of Work: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.
- D. Payment Becomes Due: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

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

#### 15.08 *Correction Period*

- A. If within ~~one~~ two years after the date of final payment ~~Substantial Completion~~ (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
  2. correct such defective Work;
  3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of ~~one~~ two years after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

### 16.01 *Owner May Suspend Work*

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

### 16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
  2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
  2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a ~~Change Order~~ Contract Modification. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

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

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
  3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

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

**ARTICLE 17 – FINAL RESOLUTION OF DISPUTES**

17.01 *Methods and Procedures*

- A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this Article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
  2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. Final Resolution of Disputes: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
2. agree with the other party to submit the dispute to another dispute resolution process; or
3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18 – MISCELLANEOUS**

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

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

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

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

### **18.03 *Cumulative Remedies***

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

### **18.04 *Limitation of Damages***

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

### **18.05 *No Waiver***

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

### **18.06 *Survival of Obligations***

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

N:\NSPE Master Docs\New Revised Specs March 2014\C-700-2002 General Conditions 2014.docx

# SUPPLEMENTARY CONDITIONS

Prepared by



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## ARTICLE 1 – SUPPLEMENTARY CONDITIONS

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

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

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## ARTICLE 2 – PRELIMINARY MATTERS

- SC-2.01 Delete Paragraphs 2.01 B. and C. in their entirety and insert the following in their place:
- B. Evidence of Contractor's Insurance: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner and Engineer copies of the policies of Insurance (including all endorsements and identification of applicable self-insured retention and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
  - C. Evidence of Owner's Insurance: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation. Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

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

SC-5.03 *Subsurface and Physical Conditions*

- SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:
- A. Report dated December 8, 2020, prepared by G2 Consulting Group, LLC, of Troy, Michigan, consisting of 46 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are as indicated in the definition of Technical Data in the General Conditions.

- B. Report dated January 25, 2021, prepared by G2 Consulting Group, LLC, of Troy, Michigan, consisting of 33 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are as indicated in the definition of Technical Data in the General Conditions.

*SC-5.06 Hazardous Environmental Conditions*

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

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

**ARTICLE 6 – BONDS AND INSURANCE**

*SC-6.03 Contractor’s Liability Insurance*

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

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

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

State:	<u>Statutory</u>
Federal, if applicable (e.g., Longshoreman’s):	<u>Statutory</u>
Employer’s Liability:	
Bodily injury, each accident	\$ <u>100,000</u>
Bodily injury by disease, each employee	\$ <u>100,000</u>
Bodily injury/disease aggregate	\$ <u>500,000</u>
Foreign voluntary worker compensation	<u>Statutory</u>

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

General Aggregate	\$ <u>2,000,000</u>
Products - Completed Operations Aggregate	\$ <u>2,000,000</u>
Personal and Advertising Injury	\$ <u>1,000,000</u>
Each Occurrence (Bodily Injury and Property Damage)	\$ <u>1,000,000</u>

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

Bodily Injury:

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

Property Damage:

Each accident	\$ <u>1,000,000</u>
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4. Excess or Umbrella Liability:

Per Occurrence	\$ <u>2,000,000</u>
General Aggregate	\$ <u>2,000,000</u>

5. Contractor's Pollution Liability:

Each Occurrence	\$ _____
General Aggregate	\$ _____

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

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

1. City of Grosse Pointe Woods, the Mayor, the City Council, and all departments and/or agents of the City.
2. Anderson, Eckstein and Westrick, Inc.

7. Contractor's Professional Liability:

Each Claim	\$ 1,000,000
Annual Aggregate	\$ 2,000,000

*SC-6.04 Owner's Liability Insurance*

SC-6.04 Delete paragraph 6.05 in its entirety and insert the following:

- A. In addition to the insurances required under paragraph 6.03, the Contractor shall also provide, at Contractor's expense, Owner's Protective Liability insurance to protect the owner against claims which may arise from operations under the Contract documents, including costs of defense from all claims.
- B. The limits of liability for the insurance required by paragraph 6.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by laws and regulations.
  - 1. Owner's and Contractor's protective liability:
    - a. General Aggregate: \$2,000,000
    - b. Each Occurrence: : \$1,000,000
    - c. Combined Single Limit: : \$1,000,000
- C. The Owner's and Contractor's Protective Liability Insurance Policy shall include, as additional named and insured, all persons or entities listed in Paragraph SC-6.03.K.6.

*SC-6.05 Property Insurance*

SC-6.05.A Add the following to the list of items in Paragraph 6.05.A, as numbered items:

- 14. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:

**ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

*SC-7.02 Labor; Working Hours*

SC-7.02.B Amend the first and second sentences of Paragraph 7.02.B to state "...all Work at the Site shall be performed during regular working hours 7:00am through 7:00pm. Contractor will not perform Work on a Sunday or any legal holiday."

## ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

### SC-10.03 *Project Representative*

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

- B. The Engineer is the designated Resident Project Representative (RPR) at the Site and will act as the Owner’s Representative.
1. General: RPR’s dealings in matters pertaining to the Work in general shall be with Owner and Contractor. RPR’s dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor.
  2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values (if any) prepared by Contractor for acceptability.
  3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
  4. Liaison:
    - a. Serve as liaison with Contractor. Working principally through Contractor’s authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
    - b. Assist in serving as Owner’s liaison with Contractor when Contractor’s operations affect Owner’s on-Site operations.
    - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
  5. Interpretation of Contract Documents: Report when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer or Owner.
  6. Shop Drawings and Samples:
    - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
    - b. Receive Samples which are furnished at the Site by Contractor, and notify Owner of availability of Samples for examination.
    - c. Advise Owner and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample

submittal for which RPR believes that the submittal has not been approved.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications. Transmit to Contractor in writing decisions as issued by Engineer
8. Review of Work and Rejection of Defective Work:
  - a. Conduct on-Site observations of Contractor's work in progress to assist in determining if the Work is in general proceeding in accordance with the Contract Documents.
  - b. Report to Owner and Contractor whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Owner and Contractor of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
  - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel.
  - b. Observe, record, and report to Owner appropriate details relative to the test procedures and systems start-ups.
10. Records:
  - a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Contract Modification, Work Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures.
  - b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

- c. Maintain records for use in preparing Project documentation.
11. Reports:
- a. Draft and recommend proposed Contract Modifications, Work Change Directives, and Work Orders. Obtain backup material from Contractor.
  - b. Immediately notify Owner of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
12. Payment Requests:  
Review payment requests with Contractor for compliance with the established procedure for their submission and forward with recommendations to Owner, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
13. Certificates, Operation, and Maintenance Manuals:  
During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents.
14. Completion:
- a. Participate in visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
  - b. Participate in final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
  - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Owner concerning acceptance and issuance of the notice of acceptability of the work.

- C. The RPR shall not:
1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items) without Owner's concurrence.
  2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
  3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
  4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.
  5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
  6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
  7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
- B. On this Project, by agreement with the Owner, 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 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

#### *SC-13.01 Cost of the Work*

SC-13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

- c. Construction Equipment and Machinery:
- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- 2) The equipment and machinery rental rates shall be computed as outlined in the MDOT "2012 Standard Specifications for Construction", Section 109.05 "Payment for Contract Revisions".

*SC-13.03 Unit Price Work*

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

- E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
  1. if the extended price of a particular item of Unit Price Work amounts to 10 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 20 percent from the estimated quantity of such item indicated in the Agreement; and
  2. if there is no corresponding adjustment with respect to any other item of Work; and
  3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

## **NOTICE TO BIDDERS**

### **GENERAL PROJECT NOTES**

AEW / mav

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#### **CONSTRUCTION STANDARDS**

All work performed under this Contract shall be constructed in accordance with, and by means and methods outlined in the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction except as otherwise modified herein.

The special provisions, specifications and supplemental specifications set-forth hereinafter supplement, or take precedence over, the MDOT 2012 Standard Specifications for Construction as indicated. Unless a Special Provision is provided hereafter, all work shall be performed, and all materials and equipment utilized on this Project, shall meet the requirements of the MDOT 2012 Standard Specifications for Construction.

Traffic shall be maintained throughout the project as provided for in the Plans and in the Special Provision for Maintaining Traffic. Pavement markings, signs and temporary traffic control devices shall be in accordance with the 2011 Michigan Manual on Uniform Traffic Control Devices (MMUTCD).

#### **UTILITY PROTECTION**

Determining the existence and the locations of underground and overhead lines and their protection shall be the responsibility of the Contractor. Utility work referring to the removal, relocation and/or replacement of gas, telephone, and electric power lines, pipes, poles and appurtenances as required, will be done by the forces of the utility company involved. Allowances in the bid for related costs of that work shall be made by the Contractor. CALL MISS DIG. Special consideration shall be given to locating, by hand digging, gas mains and gas services.

Before starting construction, the Contractor shall check with the Utility Companies to ascertain for himself the location of all utilities which might interfere with the work and shall give due notice to all organizations whose utilities will be affected by his operations.

#### **DRAINAGE STRUCTURE COVERS**

The frames and covers of all existing structures that are disturbed during construction are to be salvaged and reused, unless otherwise directed by the Engineer. All existing frames and covers that do not meet current City standards, or are found to be cracked, broken, severely corroded or otherwise unsuitable for reuse shall be replaced with new frames and covers according to the special provision contained herein. The Contractor shall be responsible for storing all removed frames and covers until the City has been given an opportunity to inspect and take possession of any frames covers that they deem salvageable. All frames and covers which are rejected by the City shall be disposed of in a legal manner by the Contractor.

#### **EMERGENCY ACCESS**

The Contractor shall provide access for emergency vehicles and personnel.

**STREET LIGHTING**

All street lights and/or light posts shall be protected by the Contractor. Any damage to the lights and/or light poles or to the buried cables as a result of the Contractor's operations shall be repaired at no additional cost to the Project.

**TREE PROTECTION**

All trees which are found in and around the construction influence area of the work being considered under this project shall be protected from damage during construction. Any tree branches damaged by power equipment during the progression of work shall be neatly trimmed to prevent long term damage. There will be no separate measurement and payment for all work required to protect tree branches from damage or to trim and dress those branches damaged during construction.

**SANITARY FACILITIES**

Necessary sanitary convenience for the use of workmen on the site, properly secluded from public observation, shall be provided and maintained in sanitary condition by the Contractor. The use of sanitary facilities shall be strictly enforced.

**AUDIO VISUAL RECORD OF CONSTRUCTION AREA**

The Contractor shall notify the Engineer a minimum of 72 hours prior to performing video survey.

**SAWCUTTING**

Sawcutting on this Project for the purpose of removing concrete or HMA pavements, walks, drives, etc. shall not be measured and paid for separately. If the materials are found to have not been sawcut to the full depth, the Contractor shall bear the expense of recutting a new joint, if necessary, as directed by the Engineer. All costs for additional removal and replacement beyond what was originally designated will be the responsibility of the Contractor.

**DRIVEWAY ACCESS**

The road shall be constructed using part width construction methods. Construction shall be staged such that no more than half of the residents within the project limits are without driveway access at a given time during construction. Part width construction methods include milling the asphalt surface in two stages to allow for residents to access driveways during stage 1 construction.

## PROGRESS CLAUSE

AEW / mav

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Start work within ten (10) days after receiving Notice of Award of Contract, or on the date agreed upon with the Engineer. In no case shall any work be commenced prior to receipt of formal notice of award by the Department.

### Completion Dates:

The project work shall be substantially completed and open to traffic on or before July 15, 2022.

The Project shall be completed in its entirety including final site restoration and clean-up on or before July 30, 2022.

Allowable work hours will be as stated in the supplementary conditions. Work hours may only be extended with the prior approval of the Owner. No work shall be performed on Sundays and Holidays, unless special permission is granted by the Owner.

The low Bidder for the work covered by this Proposal will be required to meet with the Engineer and Owner for a preconstruction conference. The scheduled date for this preconstruction conference will be set after a low Bidder has been determined.

The named Subcontractor(s), as listed in the Bid Form, is recommended to be at the preconstruction conference if such items materially affect the work schedule.

Prior to the preconstruction conference, the Contractor shall submit a preliminary Progress Schedule to the Engineer for review.

The Progress Schedule shall include, as a minimum, the controlling work items for the completion of the project and the planned dates that these work items will be controlling operations. The final project completion date shall also be included in the Project Schedule. If the bidding documents specify other controlling dates, these shall also be included in the Progress Schedule.

The Contractor may be required to attend a public meeting with the Engineer and Owner prior to the start of construction.

Liquidated Damages shall be assessed in accordance with Section 108.10 of the MDOT 2012 Standard Specifications for Construction.

**NOTICE TO BIDDERS**  
**UTILITY COORDINATION**

AEW / mav

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The contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the MDOT 2012 Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in Section 107.12 of the MDOT 2012 Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 of the MDOT 2012 Standard Specifications for Construction.

PUBLIC UTILITIES

The following Public Utilities may have facilities located within the Right-of-Way:

Detroit Edison Company Jennifer Whitteaker 1 Energy Plaza 1510 Web Detroit, Michigan 48226	(313) 235-9282	Electric
DTE Community Lighting Debra Cain	(313) 618-6996	Street Lights
DTE Gas Company Laurie Forrester 17150 Allen Road Melvindale, Michigan 48122	(313) 389-7261	Gas
Comcast Cable Warren Setty 6095 Wall Street Sterling Heights, Michigan 48312	(586) 883-7253	Cable TV
AT&T Engineering Department 100 South Main Street Room 314 Mount Clemens, Michigan 48043	(586) 466-1024	Telephone & Other Communication
Wayne County Department of Services Pete Milenkovich 29900 Goddard Road Detroit, MI 48241	(734) 955-2154	Traffic Signals

City of Grosse Pointe Woods  
Department of Public Works  
Jim Kowalski  
1200 Parkway  
Grosse Pointe Woods, Michigan 48236

(313) 343-2460

Water / Sewer

For protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall dial 1-800-482-7171 or 811 a minimum of three full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Members will thus be routinely notified. This does not relieve the Contractor of the responsibility of notifying utility owners who may not be a part of the "Miss Dig" alert system.

The owners of existing service facilities that are within grading or structure limits and/or in conflict with the proposed improvements will move them to locations designated by the Engineer or will remove them entirely from the road Right-of-Way. Owners of Public Utilities will not be required by the City to move additional poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Engineer that such poles or structures constitute a hazard to the public or are extraordinarily dangerous to the Contractor's operation.

The structure and utility information shown on the plans indicates approximate locations and type of facilities as disclosed by the various utility company records. No guarantee is given or implied to the completeness or accuracy thereof.

It shall be the Contractor's responsibility to locate and determine the exact depth of existing utilities and building services prior to construction. Said utility information shall be supplied to the Owner, Engineer, and/or utility companies involved.

There will be no compensation for delays in construction due to the failure of the Contractor to properly coordinate conflicts with utility companies.

Determining the existence and location of underground and overhead utilities and their protection shall be the responsibility of the Contractor. The Contractor shall call MISS DIG. No guarantee is made by the Owner or Engineer as to the completeness and/or accuracy of utility information shown on the plans. Information is from available records and is approximate only.

## **NOTICE TO BIDDERS**

### **PERMITS**

AEW / rtw

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0160-0433

Allard Avenue is under the control and jurisdiction of the City of Grosse Pointe Woods.

Harper Avenue is under the control and jurisdiction of the City of Harper Woods.

The Soil Erosion and Sedimentation Control Agency for this Project is the Wayne County Department of Environment (WCDOE).

The Contractor will be required to secure an SESC permit from WCDOE for this project.

The Contractor shall be responsible for securing all the necessary Permits for work to be performed under this Contract.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**REIMBURSED PERMIT FEES**

C&T:DBP

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C&T:APPR:JC:DMG:08-16-11

**a. Description.** This special provision describes the way the reimbursement, for permit fees as stated in section 107 of the Standard Specifications for Construction, will be paid.

**b. Materials.** None specified.

**c. Construction.** None specified.

**d. Measurement and Payment.** All permit fees, as described in section 107 of the Standard Specifications for Construction, will be paid for using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Reimbursed Permit Fees .....	Dollar

**Reimbursed Permit Fees** includes the reimbursement for the eligible permit fees with supporting receipts or other proof of payment documentation from the contractor.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**CURB AND GUTTER, REM, MODIFIED**

AEW / rtw

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0160-0433

**a. Description.** This item of work consists of removing segments of concrete curb and gutter in varying lengths and locations adjacent to HMA patching operations. This item of work has been modified to account for sections that are not conducive to production work.

Provide notice to Engineer at least 72 hours in advance of beginning removal and replacement operations in order to provide adequate notice to affected residents.

**b. Materials.** None.

**c. Construction.** All work shall be performed in accordance with sections 204 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

Repair areas will be identified and marked by the Engineer. Areas are expected to be outside the limits of the project, but within the city limits. The intended locations are:

- Lennon Street – West of Mack Avenue
- Lochmoor Boulevard – East of Wedgewood Drive

Sawcut pavement limits of curb and gutter removal at full depth prior to removal.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Curb and Gutter, Rem, Modified .....	Foot

Traffic control measures necessary to safely maneuver traffic around the removal and replacement operations shall be considered included in the removal and replacement pay items of work.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
STATION GRADING

AEW / mav

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0160-0433

**a. Description.** This work consists of the following; constructing earth grades by excavating soil or rock and placing embankment or fills; salvaging and stockpiling selected materials; providing, placing, and compacting embankment materials; trimming the earth grade; disposing of surplus or unsuitable material; and maintaining the work in a finished condition until accepted by the Engineer. This work shall be performed in accordance with Section 205 of the MDOT 2012 Standard Specifications for Construction except as modified herein.

**b. Materials.** Provide materials in accordance with Section 205 of the 2012 MDOT Standard Specifications for Construction.

**c. Construction.** Perform work in accordance with Section 205 of the 2012 MDOT Standard Specifications for Construction. Grade the subgrade in conformance with the cross-sections and profile grades shown on the plans, or as staked in the field by the Engineer. This item shall be subject to the conditions of, and shall include all applicable work specified in subsections 205.03.A, 205.03.G, 205.03.H.4, 205.03.J, 205.03.N, and 205.03.P.

Due to the nature of the subsurface soils, all efforts shall be made to reduce or eliminate construction traffic on the subgrade. The Contractor shall employ a "dump and push" method, or other approved method, of spreading the aggregate base that will positively prevent unnecessary rutting of the subgrade. Track wheeled equipment shall be used on the subgrade whenever possible.

All surplus excavated material shall become the property of the Contractor. Suitable excavated material may be used as embankment, where approved by the Engineer. Any additional embankment material required from off the project limits or from elsewhere on the project shall not be paid for separately, but shall be included in Station Grading. Promptly dispose of surplus or unsuitable material off site at a site secured by the Contractor.

Remove existing abandoned utilities including sewers, gas mains or services, electrical lines or conduit, and water lines or services that are above the subgrade elevation, as directed by the Engineer.

Excavate to grade and/or place embankment for drive approaches and street intersections.

Compact the earth subgrade to not less than 95% of its maximum unit weight (Modified Proctor).

**After the subgrade has been excavated to grade and underdrains are installed, the Engineer will observe the subgrade. If necessary, the Engineer will be given up to 7 calendar days (including Holidays) to allow the subgrade to dry out, before determining a stabilization method.**

Excavation and disposal of frost heave textured material, topsoil, or other unsuitable soils below the subgrade elevations will be measured and paid for separately.

Strip existing sod or lawn areas and dispose of surplus or unsuitable material. Excavate to grade and/or place embankment behind curbs with a uniform gradient to maintain surface drainage and create a uniform transition to original ground, sidewalks, the right-of-way lines, etc., whichever is applicable.

Adjust water shutoffs; gas shutoffs, gas locator boxes, etc; and disturbed sprinkler heads located within the proposed work areas.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Station Grading .....	Station

One station equals 100 feet of horizontal measure. Final measurement and payment will be made to the nearest 0.1 station.

**Station Grading** will be measured and paid for along the construction centerline and shall include any and all work on the left and right side of the pavement centerline, to the grading limits or right-of-way line, including work on side streets.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**SUBGRADE UNDERCUTTING, MODIFIED**

AEW / mav

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0160-0433

**a. Description.** This work consists of removing and replacing frost heave textured materials or other unsuitable subgrade materials in areas where the mainline pavement, aggregate base and miscellaneous drive approaches and sidewalks are being constructed.

This work shall be performed in accordance with Section 205 of the MDOT 2012 Standard Specifications for Construction except as modified below.

**b. Materials.** The backfill material shall be 21AA dense graded aggregate meeting the requirements of Section 902 of the MDOT 2012 Standard Specifications for Construction.

**c. Construction.** Perform work in accordance with Section 205.03.E of the MDOT 2012 Standard Specifications for Construction, as directed by the Engineer. Compact the backfill in lifts, not exceeding 10 inches. Compact the backfill to a minimum of 95% of the maximum dry density of the material based on the Modified Proctor (ASTM D1557).

Furnish load tickets for all materials used to fill undercut voids in accordance with Section 302.03 of the MDOT 2012 Standard Specifications for Construction.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Subgrade Undercutting, Modified .....	Cubic Yard

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
SUBGRADE UNDERCUTTING, SPECIAL

AEW / mav

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0160-0433

**a. Description.** This work consists of removing and replacing frost heave textured materials or other unsuitable subgrade materials in areas where the depth of subgrade undercutting exceeds 12” below the proposed aggregate base.

**b. Materials.** Backfill material shall be 1” x 3” open-graded aggregate meeting the requirements of Section 902 of the MDOT 2012 Standard Specifications for Construction as modified herein. Crushed concrete shall be free of all steel, joint paper, and all other deleterious material.

Material furnished shall meet the following physical gradation requirements:

SIEVE ANALYSIS (MTM 109)						
TOTAL PERCENT PASSING						
3 in	2.5 in	2 in	1.5 in	1 in	¾ in	½ in
100		95-100		15-40		0-5

**c. Construction.** Perform work in accordance with Section 205 of the MDOT 2012 Standard Specifications for Construction and as directed in the field by the Engineer. The depth of special undercut and backfill shall be at least 18 inches, and shall not exceed 22 inches below the proposed aggregate base. Stabilize undercut area by “Tracking” the 1” x 3” aggregate into the subgrade. The placement of a geogrid or a geotextile separator may be required as directed by the Engineer to stabilize the area. Backfill the top 12 inches of the undercut area with material as specified in the Subgrade Undercutting item of work.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Subgrade Undercutting, Special.....	Cubic Yard

Load tickets shall be furnished for all materials used to fill undercut voids in accordance with Section 302.03 of the MDOT 2012 Standard Specifications for Construction.

Undercut and backfill of material within 12 inches below the proposed aggregate base will be measured and paid for separately as Subgrade Undercutting of the type specified.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
EROSION CONTROL, INLET PROTECTION, FABRIC DROP

CFS:DMG

1 of 2

APPR:TWK:CP:03-22-18  
FHWA:APPR:03-29-18

**a. Description.** This work consists of furnishing and installing acceptable alternatives to inlet protection devices (devices) listed in the *Soil Erosion and Sedimentation Control Manual* when the pay item Erosion Control, Inlet Protection, Fabric Drop is included in the contract.

This work consists of providing all labor, equipment and materials necessary to furnish, install, maintain, dispose of collected material and remove devices at the locations shown on the plans or as directed by the Engineer.

**b. Materials.** The following devices are approved for use as acceptable alternatives:

1. Siltsack Type B, Regular Flow, by ACF Environmental, Inc.
2. Inlet Pro Sediment Bag, Standard Flow, with optional foam deflector by Hanes Geo Components.
3. Dandy Curb Bag, Dandy Bag, Dandy Curb Sack, Dandy Sack, or Dandy Pop by Dandy Products, Inc.
4. Basin Bag, Regular Flow by CSI Geoturf.
5. Flexstorm Catch-It and Flexstorm Pure used with filter bag types FX, FX+, FXO, PC, PC+ or IL.

Ensure provided devices are sized appropriately for the drainage structures in which they will be installed.

**c. Construction.** Install, maintain and remove the devices according to the manufacturer's guidelines. Remove material collected by the devices according to the manufacturer's guidelines or as directed by the Engineer.

Dispose of collected material in accordance with subsection 205.03.P of the Standard Specifications for Construction. Those devices that are no longer needed and have been removed may be reused elsewhere on the project as approved by the Engineer.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Erosion Control, Inlet Protection, Fabric Drop.....	Each

Erosion Control, Inlet Protection, Fabric Drop will be paid for as one each for each time the alternate device listed herein is installed, maintained, and removed at a separate location within the project limits.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**SEWER, SCH 40 PVC, 10 INCH, TR DET B**

AEW / kch

1 of 1

0160-0433

**a. Description.** This item of work consists of constructing storm sewers of the size and class herein specified, including excavation, bedding and backfill.

**b. Materials.** All pipe shall be new, Schedule 40, Polyvinylchloride (PVC) smooth wall pipe.

**c. Construction.** All work shall be performed in accordance with Sections 402 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Sewer, Sch 40 PVC, 10 inch, Tr Det B .....	Foot

The length of new pipe required to make the connection to an acceptable segment of existing pipe shall be measured and paid for with the separate pay items.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
SEWER CONNECTION, \_ INCH

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of connecting a newly installed sewer pipe to an existing sewer segment using a “Fernco” adaptor.

**b. Materials.** Bedding and backfill material shall be included in sewer items of work. Flexible, watertight “Fernco” adaptors shall be provided to connect to an existing sewer.

**c. Construction.** All work shall be performed in accordance with Sections 402 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer. Install “Fernco” Adaptors in accordance with the manufacturer’s specifications and detailed installation guides.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Sewer Connection, 10 inch.....	Each
Sewer Connection, 12 inch.....	Each
Sewer Connection, 15 inch.....	Each

The length of new pipe required to make the connection to an acceptable segment of existing pipe shall be measured and paid for with the separate pay items.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**EXTERNAL STRUCTURE WRAP, 18 INCH**

AEW / mav

1 of 1

0160-0433

**a. Description.** This work consists of placing an external, heat-shrinkable manhole sealing system of the specified size around all structures that are exposed during construction and where designated by the Engineer.

**b. Materials.** The following products (or approved equal) will be considered for use:

1. Infi-Shield
2. Wrapid-Seal
3. Cretex

**c. Construction.** Install external structure seal in accordance with the manufacturer's specifications and detailed installation guides.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
External Structure Wrap, 18 inch .....	Each

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**DR STRUCTURE TRAP, 12 INCH**

AEW / mav

1 of 1

0160-0433

**a. Description.** This work consists of furnishing and installing High Density Polyethylene trap assemblies in the first catch basin upstream of the connection to a combined sewer.

**b. Materials.** Provide High Density Polyethylene traps manufactured by Ground Water Rescue, Inc. (The Eliminator) or approved equal. Provide traps of the size indicated below:

<b>Outlet Pipe Diameter</b>	<b>Nominal Trap Size</b>
6" or less	N/A
8"	8"
10"	10"
12"	12"
15"	15"
18"	18"
21" and greater	N/A

**c. Construction.** Install the traps in accordance with the detail on the plans, and as directed by the Engineer in the field.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Dr Structure Trap, 12 inch .....	Each

CITY OF GROSSE POINTE WOODS  
 SPECIAL PROVISION  
 FOR  
**POP-UP EMITTER, STORM DRAIN, RESIDENTIAL**

AEW / mav

1 of 1

0160-0433

**a. Description.** This item of work is for the installation of a pop-up storm drain emitter for residential applications.

**b. Materials.** Materials provided for this item shall be one of the following or any approved alternative:

StormDrain Plus:  
 Part No. FSD-343-EL or FSD-344-EL  
 Or  
 NDS:  
 Part No. 321 or 421 or 430  
 Or  
 Rain Bird:  
 Model DPUV3E or DPUV4E or DPUV4EHUB

**c. Construction.** Remove the existing residential storm drain from curb to 1' from the face of the sidewalk. Excavate to a depth of 1' below the pop-up emitter and backfill with the same material used in the underdrain trench. Drill a 3/4" hole through the elbow or remove plug (if present) to allow for the pop-up emitter to drain. Install the pop-up emitter per manufacturer's instructions and as shown on the plans.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Pop-Up Emitter, Storm Drain, Residential.....	Each

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**STRUCTURE COVERS**

AEW / mav

1 of 1

0160-0433

**a. Description.** This work consists of furnishing and installing new covers, including frames and grates, on new or existing structures as required.

**b. Materials.** New structure covers shall be as follows:

<b>STRUCTURE TYPE</b>	<b>COVER TYPE</b>
Catch Basins (pavement)	EJ #5080 Frame Type "M3" Cover with 4 openings (Restricted) Type "M1" Cover with 30 openings (Open)
Storm Manholes	EJ #1040 or #1045 Frame GPW Embossed Storm Manhole Cover
Sanitary/Comb Manholes	EJ #1040 or #1045 Frame GPW Embossed Sanitary Manhole Cover
Water Gate Well	EJ #1040 or #1045 Frame GPW Embossed Water Gate Well Cover

**c. Construction.** Perform work in accordance with Section 403 of the 2012 MDOT Standard Specifications for Construction. #1045 frames will be utilized when adjusting existing structures, and #1040 frames will be utilized when constructing new structures or as directed by engineer.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Catch Basin Cover, GPW .....	Each
Catch Basin Cover, Restricted, GPW .....	Each
Combined Manhole Cover, GPW .....	Each
Storm Manhole Cover, GPW .....	Each
Gate Well Cover, GPW .....	Each

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**HMA APPLICATION ESTIMATE**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This work consists of furnishing and placing various Hot Mixed Asphalt (HMA) paving materials on a prepared base.

**b. Materials.** HMA mixtures shall be prepared in accordance with Division 5 of the 2012 MDOT Standard Specifications for Construction.

Top course material for HMA resurfacing shall be:

HMA, 5E1 applied at a rate of 220 lbs/square yard.

Leveling course material for HMA resurfacing shall be:

HMA, 4E1 applied at a 330 lbs/square yard.

The Performance Grade Binder for all HMA mixtures shall be PG 58-22.

The required Aggregate Wear Index (AWI) for top course HMA mixtures on this project is 220 min.

Bond coats shall be SS-1h and shall be applied at a rate of 0.05 gal/square yard between lifts.

**c. Construction.** The work shall be performed in accordance with Section 501 of the 2012 MDOT Standard Specifications for Construction.

**d. Measurement and Payment.** All HMA mixtures shall be measured and paid by the ton.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**SUPERPAVE FINAL AGGREGATE BLEND REQUIREMENTS**

CFS:KPK

1 of 2

APPR:JFS:CJB:05-31-18  
FHWA:APPR:06-06-18

**a. Description.** This special provision establishes the Superpave final aggregate blend gradation requirements and the Superpave final aggregate blend physical requirements.

**b. Materials.** Replace Table 902-5 and Table 902-6 of the Standard Specifications for Construction with the following tables.

<b>Table 902-5</b>						
<b>Superpave Final Aggregate Blend Gradation Requirements</b>						
<b>Standard Sieve</b>	<b>Percent Passing Criteria (control points)</b>					
	<b>Mixture Number</b>					
	<b>5</b>	<b>4</b>	<b>3 Leveling Course</b>	<b>3 Base Course</b>	<b>2</b>	<b>LVSP (a)</b>
1½ inch	—	—	—	—	100	—
1 inch	—	—	100	100	90–100	—
¾ inch	—	100	90–100	90–100	≤90	100
½ inch	100	90–100	≤90	≤90	—	75–95
⅜ inch	90–100	≤90	—	—	—	60–90
No. 4	≤90	—	—	—	—	45–80
No. 8	47-67	39-58	35–52	23–52	19–45	30–65
No. 16	—	—	—	—	—	20–50
No. 30	—	—	—	—	—	15–40
No. 50	—	—	—	—	—	10–25
No. 100	—	—	—	—	—	5–15
No. 200	2.0–10.0	2.0–10.0	2.0–8.0	2.0–8.0	1.0–7.0	3–6
a. For LVSP, less than 50 percent of the material passing the No. 4 sieve may pass the No. 30 sieve.						

Table 902-6 Superpave Final Aggregate Blend Physical Requirements													
Est. Traffic (million ESAL)	Mix Type	Percent Crushed Minimum Criteria		Fine Aggregate Angularity Minimum Criteria		% Sand Equivalent Minimum Criteria		Los Angeles Abrasion % Loss Maximum Criteria		% Soft Particles Maximum Criteria (a)		% Flat and Elongated Particles Maximum Criteria (b)	
		Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course
< 0.3	LVSP	55/—	—	—	—	40	40	45	45	10	10	—	—
< 0.3	E03	55/—	—	—	—	40	40	45	45	10	10	—	—
≥0.3 - <1.0	E1	65/—	—	40	—	40	40	40	45	10	10	—	—
≥1.0 - < 3	E3	75/—	50/—	43	40	40	40	35	40	5	5	10	10
≥3 - <10	E10	85/80	60/—	45	40	45	45	35	40	5	5	10	10
≥10 - <30	E30	95/90	80/75	45	40	45	45	35	35	3	4.5	10	10
≥30 - <100	E50	100/100	95/90	45	45	50	50	35	35	3	4.5	10	10

(a) Soft particles maximum is the sum of the shale, siltstone, ochre, coal, clay-ironstone and particles that are structurally weak or are non-durable in service.  
 (b) Maximum by weight with a 1 to 5 aspect ratio.

Note: "85/80" denotes that 85 percent of the coarse aggregate has one fractured face and 80 percent has at least two fractured faces.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**PAVEMENT JOINT AND CRACK REPAIR, SPECIAL**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of repairing concrete pavement joints at separate locations throughout the city. The intended locations are the Torrey Road parking lot and Bramcaster from Prestwick to Huntington. The work consists of providing all materials, labor, and equipment necessary to complete pavement joint and crack repairs using a milling machine.

**b. Materials.** Use materials in accordance with the standard specifications.

**c. Construction.** Perform construction in accordance with section 501 of the Standard Specifications for Construction and Standard Plan R-44 Series except as described here.

Joint repairs will be identified and marked by the Engineer. Repair areas are expected to be outside the limits of the project, but within the city limits.

Construct Pavt Joint and Crack Repr, Det 7, Special using a milling type machine no wider than 24 inches that produces a clean, rectangular, and vertical edge. Milling machines wider than 24 inches may be used with prior approval from the Engineer. Set the milling depth to no greater than 3 inches unless otherwise directed by the Engineer. Remove loose deteriorated concrete greater than 3 inches deep using a frost tooth or other method approved by the Engineer.

Remove any exposed sections of steel reinforcement after the removal of loose deteriorated concrete.

Milling and patching shall be performed in one simultaneous operation. Compact hot mix asphalt of the mix required to within 1/4 inch of the existing pavement surface. The Engineer may test the surface longitudinally and transversely using a 10-foot straight edge at selected locations in accordance with MTM 722. Correct any variations greater than 1/4 inch at no additional cost to the Department.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<b>Pay item</b>	<b>Pay Unit</b>
Pavt Joint and Crack Repr, Det 7, Special.....	Foot

**Pavt Joint and Crack Repr, Det 7, Special** will be measured as described in subsection 501.04.1 of the Standard Specifications for Construction.

Traffic control measures necessary to safely maneuver traffic around the patching operations shall be considered included in the pavement repair and hand patching pay items of work.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**HMA SURFACE, REM, MODIFIED**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of removing patches of asphalt pavement in varying widths, lengths, and locations in preparation for patching with new HMA pavement. This item of work has been modified to account for patches that are not conducive to production milling. The intended locations are Lochmoor Boulevard from Wedgewood to the east city limit and Lennon from the west city limit to Mack Avenue

Provide notice to Engineer at least 72 hours in advance of beginning removal and patching operations in order to provide adequate notice to affected residents.

**b. Materials.** None.

**c. Construction.** All work shall be performed in accordance with sections 501 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

Asphalt patching areas will be identified and marked by the Engineer. Asphalt patches are expected to be outside the limits of the project, but within the city limits.

Remove asphalt pavement using a milling type machine no wider than 24 inches that produces a clean, rectangular, and vertical edge. Milling machines wider than 24 inches may be used with prior approval of the Engineer. Set the milling depth to no greater than 3 inches unless otherwise directed by the Engineer. Remove loose deteriorated pavement greater than 3 inches deep using a frost tooth or other method approved by the Engineer.

Asphalt pavement removal and patching shall be performed in one simultaneous operation.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
HMA Surface, Rem, Modified .....	Square Yard

Traffic control measures necessary to safely maneuver traffic around the removal and patching operations shall be considered included in the removal and patching pay items of work.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
HAND PATCHING, MODIFIED

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of patching asphalt pavement in varying widths, lengths, and locations as well as concrete joint repair in varying widths, lengths and locations using hand application methods. This item of work has been modified to account for patches that are not conducive to production paving.

Repair areas will be identified and marked by the Engineer. Repair areas are expected to be outside the limits of the project, but within the city limits. The intended locations are:

- Lennon Street – West of Mack Avenue
- Lochmoor Boulevard – East of Wedgewood Drive
- Bramcaster Road – Prestwick to Huntington Boulevard
- Torrey Road Parking Lot

Provide notice to Engineer at least 72 hours in advance of beginning removal and patching operations in order to provide adequate notice to affected residents.

**b. Materials.** HMA mixtures shall be prepared in accordance with Division 5 of the 2012 MDOT Standard Specifications for Construction.

The material shall be HMA, 5E1 applied at a rate of 330 lbs/square yard.

The Performance Grade Binder for all HMA mixtures shall be PG 64-22.

Bond coats shall be SS-1h and shall be applied at a rate of 0.10 gal/square yard.

**c. Construction.** All work shall be performed in accordance with sections 501 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

Milling and patching shall be performed in one simultaneous operation. Compact hot mix asphalt of the mix required to within 1/4 inch of the existing pavement surface. The Engineer may test the surface longitudinally and transversely using a 10-foot straight edge at selected locations in accordance with MTM 722. Correct any variations greater than 1/4 inch at no additional cost to the Department.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Hand Patching, Modified.....	Ton

Traffic control measures necessary to safely maneuver traffic around the removal and patching operations shall be considered included in the removal and patching pay items of work.

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**CONCRETE MIXTURE REQUIREMENTS AND ACCEPTANCE**

AEW / mav

1 of 5

0160-0433

**a. Description.** The Contractor shall provide Portland cement concrete mixtures for the project that are resistant to excessive expansion caused by alkali-silica reactivity (ASR). The evaluation as to the resistance of submitted concrete mixtures to excessive expansion caused by ASR shall be by the Owner as described herein. This Special Provision is supplemental to all other sections within this specification related to the construction of concrete items for the project.

**b. Materials.** Mixture requirements must be in accordance with the contract.

**c. Construction.** One week after the Owner awards this project, the Contractor shall supply to the Owner all preliminary concrete mix designs and a list and location of their suppliers for concrete materials. This includes concrete manufactured both by transit mix suppliers and by the Contractor's own batch plant. In addition to review of the mixtures for compliance related to the use, the Owner shall evaluate the mixtures for the potential for excessive expansion caused by ASR to occur. Included in the Owner's evaluation shall be the Engineer's review of any previous testing on the material sources intended to be used for both the fine and coarse aggregates for the concrete mixtures. The previous testing may be from the Engineer's records from other projects or from records provided by the Contractor with the mix design(s).

If, based on the Engineer's evaluation, testing of the fine and/or coarse aggregate, as described in this specification, is determined by the Owner to be necessary to make this evaluation, the Owner shall perform such testing. The Owner shall have access to all materials, including aggregate pits, in order to obtain samples for such testing. If determined to be necessary, the Owner shall perform the following test using the fine and/or coarse aggregates proposed for each concrete mixture: ASTM C 1260 – Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar – Bar Method). All samples submitted for testing per ASTM C 1260 shall first be tested to establish conformance to the required material specification for gradation. All samples submitted shall meet the required material specification for gradation prior to being submitted for testing per ASTM C 1260.

If a mortar bar cast and tested per ASTM C 1260 produces an expansion of less than 0.10%, the fine or coarse aggregate used to construct the mortar bar shall be considered to be "innocuous" (per Appendix X1 of ASTM C-33). Concrete mixtures that include both fine and coarse aggregates considered to be innocuous shall be considered to be resistant to excessive expansion caused by ASR. Such concrete mixtures shall not require any mitigation pertaining to ASR and shall then be subject to approval based on the applicable section of this specification for the type of concrete being placed.

If a mortar bar cast and tested per ASTM C 1260 produces an expansion of 0.10% or greater, the fine or coarse aggregate used to construct the mortar bar shall be considered to be "potentially reactive". Concrete mixtures that contain either fine or coarse aggregates considered to be potentially reactive will require mitigation with respect to ASR by Methods 1, 2 or 3 indicated herein.

- Method 1. Use of a cement with an alkali level of less than 0.60% expressed as equivalent sodium oxide (percent  $\text{Na}_2\text{O} + 0.658 \times$  percent  $\text{K}_2\text{O}$ ).
- Method 2. Substitution of a portion of the cement with Fly Ash, Class F (ASTM C 618).
- Method 3. Substitution of a portion of the cement with Ground Granulated Blast Furnace Slag (GGBFS) Grade 100 minimum.

For Method 1, a copy of the most recent mill test report shall be submitted to verify the alkali level of the cement. If the alkali level is shown to be less than 0.60% expressed as equivalent sodium oxide (percent  $\text{Na}_2\text{O} + 0.658 \times$  percent  $\text{K}_2\text{O}$ ), the mixture shall be considered to be resistant to excessive expansion due to ASR and shall then be subject to approval based on the applicable section of this specification for the type of concrete being placed.

For Method 2, additional requirements for the Fly Ash, Class F are that the Calcium Oxide (CaO) percent shall be less than 10% and the available alkalis shall not exceed a maximum of 1.5%. A copy of the most recent mill test report shall be submitted to verify this. The maximum substitution of cement with the fly ash permitted shall be 25% by weight of total cementitious material (cement plus Fly Ash, Class F).

For Method 3, the maximum substitution of cement with the GGBFS permitted shall be 35% by weight of total cementitious material (cement plus GGBFS).

For methods 2 and 3, the effectiveness of the proposed cement-fly ash or cement-GGBFS combination to resist the potential for excessive expansion caused by ASR for each aggregate that is considered to be potentially reactive shall be demonstrated. To demonstrate the effectiveness of the proposed cement-fly ash or cement-GGBFS combination, the Owner shall construct and test mortar bars per ASTM C 1260 using each fine or coarse aggregate that has been considered to be potentially reactive and the proposed cement-fly ash or cement-GGBFS combination for the concrete mixture. If a mortar bar constructed of these materials produces an expansion of less than 0.10%, concrete mixtures containing the proposed cement-fly ash or cement-GGBFS combination used in the mortar bar shall be considered to be resistant to excessive expansion due to ASR for the aggregate used in the mortar bar. Such concrete mixtures shall then be subject to approval based on the applicable section of this specification for the type of concrete being placed.

If a mortar bar constructed of an aggregate that is considered to be potentially reactive and the proposed cement-fly ash or cement-GGBFS combination proposed for mitigation per Methods 2 or 3 produces an expansion of 0.10% or greater, concrete mixtures containing these materials shall not be considered resistant to the potential for excessive expansion due to ASR for the aggregate used in the subject mortar bar and shall be rejected.

Concrete mixtures that contain aggregates that are considered to be potentially reactive, as described in this specification, and that have been demonstrated to have been successfully mitigated to be resistant to excessive expansion caused by ASR, as described herein, shall then be subject to approval based on the applicable section of this specification for the type of concrete being placed.

Concrete mixtures containing fine and/or coarse aggregates for which there is previous testing per ASTM C 1260, either from the Engineer's records or from records provided by the Contractor

with the mix design(s), shall be subject to the same criteria for consideration as being resistant to excessive expansion due to ASR or requiring mitigation with respect to ASR as described herein.

If the Contractor intends to change suppliers after the evaluation and/or Mortar-Bar tests are performed, the Contractor shall inform the Owner immediately, but not less than forty-five (45) days prior to concrete batching. Upon notification, all concrete work will be postponed, without any additional costs or extensions of time allowed by the Owner, until evaluation of the new mixtures and testing of the new materials, if needed, have been completed.

The concrete temperature shall be between 50°F and 85°F at the time it is placed.

The Owner will be testing the concrete that is delivered to the project site so as to ensure that the approved mix design is being followed.

**d. Acceptance.** All classifications of concrete used on this project shall attain at least the minimum flexural and compressive strengths listed for those respective classifications of concrete in Tables 601-2 and 701-1 of the MDOT 2012 Standard Specifications for Construction.

Footnote (a) of Tables 601-2 and footnote (f) of 701-1 shall be changed to replace the word "flexural" with "compressive". For opening traffic, the concrete shall attain at least 85 percent of the required 28-day compressive strength. The compressive strength for the removal of forms in Section 701 shall be 75 percent of the required 28-day strength.

When the cylinders representing a particular section of concrete fail to meet the 28-day strength requirement, the Engineer may direct the Contractor to core that particular section of concrete (at the Contractor's expense) to determine the actual in-place compressive strength.

Non destructive testing utilizing methods per ASTM C 803 or ASTM C 805 will only be allowed when directed by the Engineer where coring would not be considered practical.

The strength of concrete shall be determined by the use of compressive strength cylinders. The Engineer will provide molds for compressive strength cylinders. The Contractor shall provide the concrete for all testing. Test beams for flexural tests will not be made. If more than one cylinder is used to verify the 28-day strength, the maximum value will be used.

When the cylinders representing a particular section of concrete fail to meet the required 28-day compressive strength (RCS) requirements in Tables 601-2 and 701-1 of the MDOT 2012 Standard Specifications for Construction, the Contractor shall be required to remove and replace the concrete at no cost to the Owner. If in the judgment of the Engineer, the concrete has sufficient strength to remain in place, the unit price of the appropriate concrete pay item will be adjusted by the following amount:

<b>ADJUSTMENT UNIT PRICE</b>	<b>28-DAY COMPRESSIVE TEST RESULTS (ACS)</b>
$2.0 \times \frac{RCS - ACS}{RCS} \times (\text{Unit Price})$	1.0% to 5.0% below the RCS
$2.75 \times \frac{RCS - ACS}{RCS} \times (\text{Unit Price})$	5.1% to 10.0% below the RCS
$3.5 \times \frac{RCS - ACS}{RCS} \times (\text{Unit Price})$	10.1% to 15.0% below the RCS
Remove and Replace, or as directed by the Engineer	10.1% to 15.0% below the RCS

Where:

- RCS = Required Compressive Strength (28-day)
- ACS = Actual Compressive Strength (28-day)

As an additional basis of acceptance the Engineer will obtain cores of the finished pavement for determination of placement thickness and compressive strength to insure compliance of the pavement meeting specifications. The coring procedure and acceptance criteria will be in accordance with MDOT 2012 Standard Specifications for Construction 602.04 as modified herein.

Cores in concrete sidewalk and driveways may be taken at the discretion of the Engineer for determination of placement thickness and compressive strength.

The Michigan Test Method 201 (MTM) is modified as follows:

**Determination of Pavement Units**

1. 4.2.1 and 4.2.2 are hereby deleted and replaced by the following.

Divide areas in each lane into units of 500 linear feet. For this project the local roads will be considered to have two lanes regardless of width. The width of each lane will be considered half of the total pavement width. Pavement placed for boulevards will be considered to have 4 lanes total, two in each direction and pavement placed for eyebrows will be considered to have 3 lanes total. The length of the last unit will be variable to conform to the remaining pavement limits, and will be from 250 to 750 feet in length.

Table 602-2 "Price Adjustment for Concrete Thickness Deficiency" is hereby modified as follows:

Initial Core Type	Deficiency in Thickness, in	Price Adjustment, %
A	0.2 or less	0
B	0.3	-5
B	0.4	-15
B	0.5	-25
B	0.6 to 0.7	-50
C	0.8 and over	-100 or remove and replace as determined by the Owner

CITY OF GROSSE POINTE WOODS  
 SPECIAL PROVISION  
 FOR  
**CURB AND GUTTER, CONC, DET F2, MODIFIED**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of replacing segments of concrete curb and gutter in varying lengths and locations adjacent to HMA patching operations. This item of work has been modified to account for sections that are not conducive to production work.

Provide notice to Engineer at least 72 hours in advance of beginning removal and replacement operations in order to provide adequate notice to affected residents.

**b. Materials.** All materials shall be in accordance with section 802 of the MDOT 2012 Standard Specifications for Construction.

**c. Construction.** All work shall be performed in accordance with section 802 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

Construct new curb with height and shape to match the existing.

Repair areas will be identified and marked by the Engineer. Areas are expected to be outside the limits of the project, but within the city limits. The intended locations are:

- Lennon Street – West of Mack Avenue
- Lochmoor Boulevard – East of Wedgewood Drive

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Curb and Gutter, Conc, Det F2, Modified.....	Foot

Traffic control measures necessary to safely maneuver traffic around the removal and replacement operations shall be considered included in the removal and replacement pay items of work.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**MAINTAINING TRAFFIC**

AEW / rtw

1 of 7

0160-0433

**a. Description.** This work shall consist of all labor, materials and equipment required to maintain traffic in accordance with this Special Provision for work related to the Oxford Road Reconstruction in the City of Grosse Pointe Woods.

**b. General.** Traffic shall be maintained by the Contractor throughout the project in accordance with Sections 104.07, 104.11, and 812 of the 2012 MDOT Standard Specifications for Construction, the 2011 Michigan Manual on Uniform Traffic Control Devices (MMUTCD), this Special Provision, and any Supplemental Specifications in the Proposal.

1. The Contractor must develop and submit to the Engineer at the pre-construction meeting an Internal Traffic Control Plan (ITCP) per Section 104.11.B of the 2012 MDOT Standard Specifications for Construction. The Contractor's ITCP is subject to the approval of the Engineer. Allow a minimum of 7 calendar days to review the plan for acceptance or provide comments for plan revisions. An approved ITCP is required prior to the start of work. Revisions to the Contractor's ITCP may be required as the work progresses. All costs associated with the development and/or revisions of the Contractor's ITCP have been considered to be included in the cost of other contract items.
2. The Contractor shall coordinate his work with other Contractors that may be performing work within the Construction Influence Area (C.I.A.), or adjoining areas, to avoid conflicts in the maintenance of traffic or construction signing, and to provide for the orderly and safe progress of contract work.
3. The Contractor shall notify the Engineer a minimum of three business days prior to the implementation of any detours, road closures, sidewalk closures, lane closures, or major traffic shifts.
4. The Contractor shall contact local public safety departments within three business days of all detours, road closures, sidewalk closures, and lane closures prior to the start of that closure being implemented.

**c. Construction Influence Area (CIA).** The CIA shall include the areas within the right-of-way of the following roadways, within the limits described below:

1. Project streets from the point where advanced construction warning signing begins to the point where construction warning signing ends:

Allard Avenue

2. In addition, the CIA shall include the following major cross streets, from the point where advanced construction warning signing begins to the point where construction warning signing ends:

Harper Avenue

3. The CIA shall also include any minor cross streets, from the point where advanced construction warning signing begins, or 500 feet in advance of the project street, whichever is greater:

Chester Avenue

Arthur Avenue

4. Also included in the CIA are the advance construction signs placed on various routes advising motorists of pending construction activities.

**d. Work Restrictions.**

1. All work shall be performed between the allowable work hours stated in the supplementary conditions. Work hours may be extended beyond the allowable work hours with the prior approval of the Engineer to perform timely sawing of new concrete pavements. **IN NO CASE SHALL CONCRETE RELIEF SAWCUTTING WORK EXTEND BEYOND 10:00 PM.** No work shall be performed on Sundays and Holidays, unless special permission is granted by the City of Ecorse.
2. No work shall be performed during the holiday periods as defined by the Engineer.

**e. Traffic Restrictions - General.**

1. The Contractor must maintain traffic in accordance with the signing typicals and notes contained therein, except as noted below. Changes or adjustments in the MOT plans, temporary pavement marking and signing typicals provided may be necessary, subject to the approval of the Engineer or as determined by the Engineer.
2. No more than half the residents within the project limits shall be without access to their driveways at any time.
3. The hours described in this special provision may be modified or changed by the Engineer due to holidays, special events or traffic volumes.
4. The minimum lane width on project streets is 10'.
5. The existing speed limit of 25 mph will be maintained throughout the work zone. The existing speed limit will also be retained on intersecting side streets, unless otherwise approved by the Engineer.
6. The Contractor shall notify the Engineer at least three business days in advance of the removal of existing signs.

7. Changes or adjustments of sign locations as shown in the signing typicals and proposed staging plans provided may be necessary to fit field conditions or as determined by the Engineer.
8. Access for emergency vehicles (fire, ambulance, and police) shall be maintained at all times as directed by the Engineer.
9. Access to side streets must be maintained where directed by the Engineer and as detailed in the stage drawings.
10. Parking of the Contractor's employee's vehicles will not be allowed within the construction zone, except in areas determined by the Engineer. Contractor's vehicles may not utilize the on-street parking within 300' of the road closure.
11. Parking of the Contractor's or his employee vehicles will not be allowed in private parking lots unless written consent from the property owner has been received and supplied to the Engineer.
12. When lane closures are in place, completely cover or remove all conflicting warning, regulatory, and guide signs that are not applicable during construction.
13. Permanent signs that are improperly covered or damaged due to work on this project shall be replaced in kind by the Contractor at their own expense.
14. Prior to opening any lanes, remove (sweep and vacuum) all debris using a self-contained vacuum. The cost of sweeping is included in the cost of other contract items.
15. Replace all signs prior to opening lanes to traffic.
16. Traffic switches are prohibited weekdays between the hours of 6:00 am and 9:00 am, and between 3:00 pm and 7:00 pm.
17. Pedestrian access must be maintained at all times. Where portions of the sidewalk are being replaced, the Contractor shall provide safe passage around the construction zone for pedestrians.

**f. Traffic Restrictions-Lane Closures.**

1. Lane closures during Pre-Stage I and Post-Stage II work will not be permitted if the contractor is not actively working.
2. A minimum of one (1) lane of traffic on project streets shall be maintained at all times during Pre-Stage I and Post-Stage II work.
3. Minor and non-signalized intersections may be closed as directed by the Engineer.

**g. Construction Staging.** The traffic control required by this special is based on the suggested sequence of operations. The following is a brief description of traffic control required during each suggested construction stage.

Pre-Stage 1:

Erect Stage 1 traffic control signage and devices

Pavement Reconstruction:

- Sawcut pavement

Storm Sewer:

- Remove existing catch basins and storm sewer crossings
- Install proposed drainage structures and storm sewer

Stage 1:

Pavement Reconstruction:

- Remove Stage 1 asphalt surface
- Remove Stage 1 concrete base course and driveways
- Perform station grading
- Install and backfill underdrain
- Place aggregate base course
- Pave Stage 1 curb and gutter
- Pave Stage 1 driveways
- Pave Stage 1 leveling course

Stage 2:

Pavement Reconstruction

- Erect Stage 2 traffic control signage and devices
- Remove Stage 2 asphalt surface
- Remove Stage 2 concrete base course and driveways
- Perform station grading
- Install and backfill underdrain
- Place aggregate base course
- Pave Stage 2 curb and gutter
- Pave Stage 2 driveways
- Pave Stage 2 leveling course

Post-Stage 2:

- Pave asphalt top course
- Perform restoration and cleanup

## **h. Traffic Control Devices.**

### **1. General.**

- A. All traffic control devices and their usage shall conform to the 2011 Michigan Manual on Uniform Traffic Control Devices (MMUTCD), and as specified in the plans or proposal.
- B. All items used for maintaining traffic shall meet “acceptable” criteria as defined by the American Traffic Safety Service Association (ATSSA) “Quality Guidelines for Work Zone Traffic Control Devices and Features” at the time of deployment and after each stage change.
- C. The Contractor shall routinely maintain all traffic control devices. The Contractor shall be responsible for reviewing the adequacy and maintenance of all traffic control devices at least once per day everyday for the duration of this project.
- D. Traffic control devices used on this project (except for arrow boards and PCMS’s) shall comply with NCHRP 350 or MASH where applicable.
- E. The Contractor shall be responsible for protecting the work area and must supply the necessary traffic control devices in addition to those called for on the plans to delineate the work area from the adjacent property.

### **2. Temporary Signs.**

- A. All temporary signs used on this project shall be fabricated utilizing prismatic retro-reflective sheeting.
- B. All diamond warning signs along project streets and local roads may be 36” x 36” minimum. All diamond warning signs along Mack Avenue must be 48” x 48” minimum.
- C. All temporary signs shall have a minimum bottom height of 7’.
- D. All warning signs with supplemental plaques shown below the warning sign shall be placed on separate supports under the parent sign. The minimum bottom height of the supplemental plaque shall not be less than 1’ below the normal bottom height of the parent sign.
- E. No signs shall be attached to Type III Barricades.
- F. Unless otherwise noted on the sign layout plans, all temporary special signs shall be installed on steel posts. The cost of steel posts, portable supports, and the cost of relocating the sign and supports, shall be included in the cost of the sign.
- G. Temporary sign supports shall be designed in accordance with the MDOT chart for wind loading.

- H. The Contractor shall place W20-1 "ROAD WORK AHEAD" signs on all intersecting local roads where construction activities may be encountered. Place supplemental W16-8 "9th St" plaques where shown on the plans or as directed by the Engineer.
  - I. Unless otherwise noted, all applicable existing/proposed signs are assumed to be in place during construction. All existing signs in conflict with the temporary traffic control shall be covered. Conflicting Type II and III signs shall be identified in the field by the Engineer and Contractor. When ground-mounted signs on this project are to be covered, they shall be covered in accordance with Section 812.03 of the MDOT 2012 Standard Specifications for Construction.
  - J. All signs, temporary or permanent, which are damaged as a result of improper sign covering, shall be replaced at the Contractor's expense.
3. Channelizing Devices and Barricades.
- A. Use Lighted Arrows, Type B when closing a traffic lane or where directed by the Engineer.
  - B. Channelizing devices used on this project shall be plastic drums with high intensity sheeting for traffic shifts and tapers, sidewalk closures and as directed by the Engineer. 42 inch channelizing devices may be used on project streets in the construction zone to maintain minimum lane widths through the construction zone, and in other areas as approved by the Engineer. The use of cones will not be allowed on this project, except where approved by the Engineer.
  - C. Space channelizing devices as shown below, unless otherwise called for in the plans or as directed by the Engineer. In general, the spacing shall be as follows:
    - (1) 50 feet in tangents
    - (2) 25 feet in shifts or tapers
    - (3) 10 feet at locations where tight traffic control is required
  - D. Place a Type II Barricade at the limits of all sidewalk removals and other areas as directed by the Engineer
  - E. Place Type III Barricades, Lighted downstream of all major and minor intersections across the closed lane(s), and intermittently, as directed by the Engineer.

**i. Measurement and Payment.** The completed work for all required traffic control measures shall be measured and paid for at the Contract unit prices using the following pay items:

<b>Pay Item</b>	<b>Pay Unit</b>
Traffic Control, Minor Street.....	Lump Sum

Salvaging and re-installing existing Type II and Type III signs will not be measured and paid for separately.

Payment for traffic control related to sidewalk activities shall be included in the pay item provided for **“Traffic Control, Minor Street.”**

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
PROPOSED TREES

AEW / mav

1 of 1

0160-0433

**a. Description.** This item of work is for the planting of a variety of trees per the Construction Documents.

**b. Materials.** Materials provided for this item shall be in accordance with Section 815 of the MDOT 2012 Standard Specifications for Construction, and as modified herein.

The City of Grosse Pointe Woods is allowing residents to pick from the following species to replace the trees that were removed for construction:

- Pyrus calleryana 'Callery Pear'
- Tulipa 'Tulip'
- Acer Pseudopatanus 'Regal Petticoat Maple'
- Tilia 'Linden'

All proposed trees should be 2.0 to 2.5 inch caliper trees that are balled and burlapped.

Contractor shall request a final planting schedule at least 2 weeks prior to placing order for trees.

**c. Construction.** Perform the required tree planting in accordance with Section 815 of the MDOT Standard Specifications for Construction, and as modified herein.

**d. Measurement and Payment.** The completed work, as described, shall be measured and paid for at the contract unit price using the following pay item:

<b>PayItem</b>	<b>Pay Unit</b>
Proposed Trees.....	Each

This work shall be paid at the Contract unit price for each tree planted. The required seasonal watering and cultivation per Section 815 for each tree planted shall be included in the Contract unit price for each.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**STAKING FIRST ROW OF SOD**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work consists of stabilizing the first row of sod along the back of curb using stakes in an effort to prevent the sod from being washed away during heavy rains.

**b. Materials.** Stakes shall be removable and biodegradable.

**c. Construction.** All work shall be performed in accordance with Sections 823 of the 2012 MDOT Standard Specifications for Construction, as detailed on the plans, and as directed by the Engineer.

Stakes shall be removed by the contractor after the new roots have been established. In the event that sod is washed away despite the staking. The Contractor is responsible for restoring the damage within 24 hours.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Staking First Row of Sod .....	Foot

CITY OF GROSSE POINTE WOODS  
SPECIAL PROVISION  
FOR  
**IRRIGATION SYSTEM RESTORATION**

AEW / mav

1 of 2

0160-0433

**a. Description.** This work consists of verifying the location of, removing and salvaging portions of existing privately owned and maintained irrigation systems within the road right of way which are disturbed by construction. The work also includes the re-installation of sprinkler lines and spray heads after the work has been completed, prior to performing the final site restoration work.

Existing lawn irrigation systems are not necessarily shown or described in the contract documents. The Contractor shall ensure that proper care is taken during construction to locate, salvage and protect any existing lawn irrigation systems.

The work shall be performed by individuals familiar with all aspects of irrigation system installation with a minimum of five (5) years of experience in such work.

**b. Materials.** Utilize existing materials whenever possible. Provide new components of equal size and material if existing materials are deemed unsalvageable. New components must be compatible with the existing system.

**c. Construction.** Notify all businesses and residents of the impending construction and ask that they physically locate all sprinkler heads and other appurtenances prior to the start of construction.

Locate existing irrigation lines and spray heads. Carefully cut and remove the existing lines at a point just outside the limits of earth excavation. Insert temporary plugs into all open ends of pipe which are capable of withstanding any line pressure from the remaining portion of the irrigation system which is left undisturbed. Mark or record the location of plugged service lines.

Salvage all existing spray heads for later use. If deemed un-salvageable, furnish and install a new spray head of equal size and material.

Remove and dispose of existing plastic piping and spray heads which will not be re-used.

Employ the services of a recognized irrigation consultant to direct the Contractor in replacing the irrigation systems that are being altered, ensuring that the new lawn surface or parkway areas are adequately and properly covered by the new irrigation system components.

Verify the system functionality with the homeowner and/or business in the presence of the Engineer's Representative.

Irrigation system restoration shall be completed within 7 days of final grading.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s).

<b>Pay Item</b>	<b>Pay Unit</b>
Irrigation Pipe	Foot
Sprinkler Head, Adj	Each
Sprinkler Head	Each

The Completed work shall be measured and paid for as follows:

- a. All new irrigation pipe required to repair an existing irrigation system shall be measured per foot, regardless of the diameter size and includes the removal and disposal of existing pipe.
- b. All new sprinkler heads required to replace an unsalvageable head shall be measured per each head furnished and installed, regardless of the type or size.

Prior to payment for the irrigation work, the Contractor shall be required to provide the Engineer documentation showing that each homeowner and/or business has reviewed and accepted the irrigation repairs.

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**AUDIO VISUAL RECORD OF CONSTRUCTION AREA**

AEW / rtw

1 of 1

0160-0433

**a. Description.** This item of work includes the accurate documentation of existing conditions of surface features within the construction area prior to construction.

**b. Materials.** None.

**c. Construction.** All work shall be performed in accordance with Article 1.04 of the General Requirements contained herein.

The Contractor shall notify the Engineer 72 hours prior to recording the construction areas.

Documentation of conditions must be performed within the 30 days prior to work beginning.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Audio Visual Record of Construction Area .....	Lump Sum

CITY OF GROSSE POINTE WOODS

SPECIAL PROVISION  
FOR  
**RUBBISH PICKUP**

AEW / mav

1 of 1

0160-0433

**a. Description.** This item of work consists of the weekly pickup and moving, by the Contractor, of both commercial and residential rubbish and recycling containers from the front yards where work under this Contract will inhibit or prevent the City's Refuse Collection Service from collecting said rubbish, etc.

**b. Materials.** None.

**c. Construction.** All Business Owners and residents will be instructed to have their rubbish and recycling containers at the curb side or sidewalk prior to 7:00am on their normal pick-up day. The Contractor shall pick-up and move said rubbish to the temporary designated location (either across the street, or in close proximity to the C.I.A.) by 7:30am on that day. Once picked up by the City's Refuse Contractor, the trash cans and recycling containers shall be returned, by the Contractor, to each property owner's frontage.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Rubbish Pickup.....	Lump Sum

## GENERAL REQUIREMENTS

### **ARTICLE 1 – GENERAL**

#### **1.01 Purpose**

These General Requirements are supplemental to and form a part of the Contract herewith attached. They are intended to describe the general, quality and site control requirements to complete the Work specified. The General Requirements are further intended to cover the common phases of infrastructure construction according to the Contract Documents.

To safeguard the interests of the Owner, the Contractor will take all measures not specifically enumerated herein, but which conform to commonly accepted industry practices to secure the desired result. To further guard the Owner, all essentials of good practice in hiring, performing the Work, installation, protecting the Work and in the protection of individuals and property, whether enumerated herein or not, shall be followed.

#### **1.02 Included Items**

All labor, equipment, and materials necessary to perform the Work shall be considered as part of the Contract. Any items of work not specifically called for in the Contract Documents, but which are clearly necessary, are to be included at no increase in Contract Price.

#### **1.03 Governing Standards**

All materials, methods of construction, and testing shall conform to the current edition, at the time and date of Bid Opening, of the following governing standards, specifications and practices: American Association of State Highway Transportation Officials (AASHTO), American Concrete Institute (ACI), Americans with Disabilities Act Access Guidelines (ADAAG), American National Standards Institute (ANSI), American Standards Association (ASA), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), American Welding Society (AWS), American Water Works Association (AWWA), Concrete Pipe Association of Michigan (CPAM), Michigan Department of Transportation (MDOT) Standard Specifications for Construction, Michigan Occupational Safety and Health Administration (MIOSHA), the Michigan Manual of

Uniform Traffic Control Devices (MMUTCD), National Association of Sewer Service Contractors (NASSCO), National Clay Pipe Institute (NCPI), Public Rights-of-Way Accessibility Guidelines (PROWAG), and Occupational Safety and Health Administration (OSHA).

In interpreting any specification or standard referred to, terms such as “Purchaser”, “Owner”, and the like shall be understood to mean the Owner and terms such as “Manufacturer,” “Supplier,” and the like shall mean the Contractor, as defined in the General Conditions.

In the event of conflict within governing standards referenced above, the most restrictive standard, as determined by the Engineer, will govern.

#### **1.04 Audio-Visual DVD Record of Site**

##### **A. Purpose**

The purpose of the audio-visual record of construction area is to accurately document the existing condition of the surface features within the construction area zone of influence prior to construction. When requested, the Contractor shall furnish the Owner a complete, color, audio-visual record in accordance with these specifications.

##### **B. Qualifications**

The audio-visual record of construction area shall be performed by a responsible commercial firm known to be qualified and regularly engaged in the business of color audio-visual construction documentation. The firm shall furnish such information as the Owner and/or Engineer deems necessary to determine ability to produce professional quality video in accordance with this specification.

The Contractor shall provide all labor, equipment, and materials necessary to provide a complete audio-visual record of the construction area in accordance with this specification.

##### **C. Scheduling**

No equipment or material shall be placed or delivered to the construction area prior to performing the audio-visual recording and submittal of all deliverables to the Owner.

The audio-visual recording shall be done during a time of good visibility. No recording shall be done during periods of visible precipitation or when more than ten percent (10%) of the ground area is covered with snow, unless authorized in writing by the Owner.

The Contractor shall notify the Owner seventy two (72) hours prior to any scheduled recording on private property. The Owner shall notify affected property owners of scheduled recording and request permission. If permission is denied, Contractor shall immediately notify the Owner. The audio-visual record log shall note where permission for entry onto private property was requested and not obtained thereby limiting access to public ROWs only.

#### D. Coverage

The audio-visual coverage shall include all surface features located within the construction zone of influence. The construction zone of influence shall be defined as follows:

1. the area within any permanent and temporary easements and the areas adjacent to these easements which may be affected by routine construction operations;
2. the area within all road ROWs and the areas adjacent to these ROWs which may be affected by routine construction operations; and
3. as directed by the Owner.

The surface features within the construction zone of influence shall include, but not be limited to, all visible existing pavement, roadways, driveways, sidewalks, curbs, ditches, culverts, utility structures (manholes, gate wells, hydrants, catch basins, cleanouts, curb stop valves, etc.), landscaping, trees, shrubbery, fences, headwalls, retaining walls, and buildings. Of particular concern shall be the existence and location of any faults, fractures, and defects.

Houses and buildings shall be identified visually by address, when visible, in such a manner that structures of the proposed system (i.e., manholes on a sewer system & gate wells and hydrants on a water system) can be located by reference. In all instances, however, location shall be identified by audio and visual means at intervals not to exceed 100 linear feet in the general direction of travel.

Areas which lie within the construction zone of influence and which are accessible by conventional wheeled vehicles shall be recorded on both sides of the ROW, easement, or street.

The Owner shall have the authority to designate areas to be added or omitted from audio-visual coverage.

#### E. Performance

All video shall be mastered in a high resolution digital format. Recording on VHS and transferring to DVD is not permitted.

To preclude the possibility of tampering or editing in any manner, all video must continuously display transparent digital information germane to the current video image. This information must be electronically incorporated through the original recording device.

The date and time of recording shall be continuously displayed in the upper left corner of the video. The time information shall consist of real time hours and minutes, separated by colons (i.e. 10:38 a.m.). The date information will include the month, day, and year and be placed directly below the time information (i.e. 10/5/10).

Global Positioning System (GPS) location by Differential GPS Satellites shall be displayed in the bottom center of the video. GPS location shall update once per second at five (5) meter or less positional accuracy. GPS location display will be at one tenth (1/10) arcsecond longitude and one tenth (1/10) arcsecond latitude (i.e. N41°40'52.9" W83°17'30.2").

Information to assist the viewer's orientation will appear directly below the GPS location display. This information should be limited to one (1) line of text and be sufficient allow a viewer to quickly identify the general location within the project area (i.e. "Esmt between First and Second", "Main St. – North ROW", "54321 Lincoln Ave", etc.).

Accompanying the video recording shall be a corresponding and simultaneously recorded audio track containing the commentary of the camera operator. The commentary shall assist in the maintenance of viewer orientation, identification of surface features, and objective description of the points of interest being shown on the video image. Of particular concern shall be the existence and location of any faults, fractures, and defects.

The distance from the camera lens to the ground shall be between eight (8) and ten (10) feet to ensure proper perspective. Vehicles used to

perform the audio audio-visual record shall be plainly marked with Contractor name and phone number. Contractor is responsible for traffic maintenance and control.

The rate of speed in the general direction of the conveyance used during recording shall not exceed forty eight (48) feet per minute. Panning and zoom rates shall be electronically or manually controlled to provide clear viewing during playback.

In some instances, audio-visual coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance approved by the Engineer.

#### F. Deliverables

The Contractor shall furnish to the Owner two (2) copies of the complete audio-visual record of the construction area. The complete audio-visual record of the construction area shall consist of the audio-visual record logs, the audio-visual recording of the construction area, and an edited set of the construction drawings.

The audio-visual record log shall accurately catalog the contents of each DVD. A separate log shall be created for each DVD. Each log shall include the following information in the title/header section: Owner, Project name, AEW project number, date of recording and unique DVD number. Additionally, each log shall include the following information for each individual segment:

1. Reference construction drawing sheet number;
2. Street name, easement description, or address;
3. Travel direction;
4. Real time code indexing for each individual segment, indicating hours, minutes and seconds to cross reference with playback equipment to locate specific points of interest on the project;
5. Camera viewing direction
6. Starting location – description, GPS location and approximate engineering stationing;
7. Ending location – description, GPS location and approximate engineering stationing.

Each individual segment must be intuitively delineated using intersections, addresses, landmarks, or in the absence of more distinguishing features, GPS location display. Examples of acceptable segment delineation include:

- North Main Street ROW from Seventh Ave to Eighth Ave;
- East Oak Street ROW from DTE Corridor to County Drain;
- South Lincoln Ave ROW from 54001 Lincoln to 54999 Lincoln;
- Water Main Easement from Washington Elementary to Second Street.

If GPS location display is used to delineate segments, each segment shall include no more than 500 linear feet.

The audio-visual recording of the construction area shall be furnished on new, premium quality, single sided DVD(s) in individual DVD case(s). If multiple DVDs are required to furnish the audio-visual recording of the construction area, each DVD will be assigned a unique number. DVD(s) must be of an “authored” format which can be played and viewed in a consumer available DVD player and personal computer (DVD-R, MPEG-2, uncompressed). Video shall be NTSC-525 format with 525 horizontal lines per frame, 60 fields per second and 30 frames per second (fps).

The DVD(s) shall have chapters, or tracks, set at five (5) minute intervals to facilitate viewer navigation.

The DVD(s) must not contain any copy protection. The Owner and Engineer must be able to make copies of the recording from the DVD to VHS, Video-CD, or additional DVDs.

All DVD(s) and DVD cases shall be labeled with applicable project information and be cross referenced to audio-visual record logs. Information on the label shall include:

1. Unique DVD number
2. Owner
3. Project name
4. AEW project number
5. Date of recording
6. “Owner’s copy” or “Engineer’s copy”, as applicable.

An edited set of the construction drawings shall include the complete engineering plan set edited by the Contractor. Edits shall consist of delineating the points of beginning and ending of each individual segment, notation of unique DVD number of each individual segment, and an arrow indicating direction of travel for each individual segment. Edits shall be legibly written in red ink.

G. Acceptance

The Owner shall have the authority to reject all or any portion of the audio-visual record not conforming to these requirements.

**ARTICLE 2 – QUALITY**

**2.01 Observation of Materials & Work to be Performed**

Each bidder shall enter, as the “Estimated Quantity” of Construction Observation (when called for in the Basis of Bid), the number of “Crew Days” he will require for completion of the project. This number shall then be multiplied by the unit price for Construction Observation and the extension entered as the “Bid Price” for this item of work. The basis of computing crew days shall be based upon the Observer’s time as follows:

**¼ crew day for each 2 hour increment or part thereof.**

“Crew Days” as referred to above shall be computed for any one operation that requires a full time Construction Observer. The number of Observers required shall be as determined by the Engineer. Construction operations requiring full time Construction Observation are generally defined as follows:

A. General

1. Placement of traffic control devices.
2. Material testing and checking. (Services performed by a testing laboratory not included).
3. Observation of constructed appurtenances can be performed by the same Observer of the primary construction provided that both operations are in close proximity of each other and further provided that the Contractor cooperates to the extent that the Observer is informed, in advance, of the intent to construct the appurtenances and that no work be covered prior to the Observer having viewed the work performed. Proximity shall mean a DISTANCE NOT TO EXCEED 1000 FEET.

B. Paving

1. Site preparation, excavation and paving.
2. Sawing and sealing.
3. Sidewalks, trails & aggregate surfaces.

C. Water Systems

1. Site preparation, excavation, bedding, pipe installation/repair and backfill.
2. Tunneling, jacking and boring operations.
3. Installation and construction of appurtenances. (See General)
4. Pressure testing and disinfecting.

D. Sewer and Drains

1. Site preparation, excavation, bedding, pipe installation/repair and backfill.
2. Tunneling, jacking and boring operations.
3. Construction of appurtenances. (See General)
4. Infiltration, exfiltration and /or low pressure air testing. (as required)
5. Cleaning operations.
6. CCTV inspection.

E. Structures

1. Excavating and shaft construction.
2. Placement of forms and re-steel.
3. Placement of concrete.
4. Backfilling around structures.
5. Installation and testing of equipment.

F. Restoration

Restoration of all areas disrupted by the Contractor’s construction activities.

On pay estimates the actual number of “Crew Days” accumulated, up to the estimated quantity bid, will be entered and extended. This amount will be deducted from the pay estimate and retained by the Owner for Construction Observation services performed.

If the Contractor completes the Work using fewer “Crew Days” than the number stated in their Basis of Bid, the final payment shall include, in addition to the balance due him for the items of work completed, an amount equal to the number of unused “Crew Days” multiplied by the unit price for “Crew Days” as stated in the Basis of Bid.

If the Work under the Contract is incomplete when the Contractor has expended the number of “Crew Days” stated in their Basis of Bid, subsequent payments to the Contractor shall include a deduction equal to the number of excess “Crew Days” multiplied by the unit price for “Crew Days” as stated in the Basis of Bid.

The Contractor should note that the Observer's time, as used to compute "Crew Days", is measured from Portal to Portal.

If by Contract Modification, the quantity of Work under the Contract varies significantly from that stated in the Basis of Bid; the number of "Crew Days" shall be increased or decreased, as appropriate, in said Contract Modification. If the Contract Modification contains no increase or decrease in the number of "Crew Days" of Construction Observation, then no adjustment is to be made in the number of "Crew Days" stated in the Basis of Bid.

The Contractor shall give the Engineer at least 48 hours' notice, exclusive of Saturdays, Sundays or holidays, when the project will have an increase or decrease in the number of Contractor crews that will be performing work on the project so the Engineer can determine if an increase or decrease in the number of Construction Observers is required.

## **2.02 CCTV Inspection (Post-Const.)**

The Contractor shall provide for closed circuit television (CCTV) inspection of all installed sewers. All installed sewers shall be cleaned, by and at the Contractor's expense, immediately prior to CCTV inspection to ensure the sewers are free of debris. The inspection shall be performed in accordance with the current guidelines of the National Association of Sewer Service Companies (NASSCO) and performed by a NASSCO Pipeline Assessment and Certification Program (PACP ©) certified operator. All CCTV inspection shall be witnessed by the Owner and the Contractor. Any CCTV inspection performed in the absence of the Owner will be rejected. The CCTV Inspection shall not be performed if there is any fog or other adverse conditions within the sewer that may impair visibility.

All CCTV inspection shall be recorded on new, premium quality, single-sided DVD(s) on which sound and colored video information shall be recorded and turned over to the Owner. DVD shall be of an "authored" format capable of being viewed in a standard DVD player commonly available (DVD-R, MPEG-2). Display frame rate shall be 30 in National Television System Committee (NTSC) format. Each manhole to manhole section shall be on a separate track. The DVD shall include a menu listing section number, street number, manhole numbers, direction of flow and total footage. Selection of an individual inspection section shall

occur through this menu. The DVD shall not contain any copy protection. The Owner shall be able to make copies of the footage to additional VHS tape, DVD, or video-CD. All DVD's shall be correctly labeled and titled with the project name and number, and reference DVD number. The Contractor shall provide a DVD log containing a table of contents with the project name, number and reference to the contents of each DVD.

The color CCTV camera used for the inspection shall be one specifically designed and constructed for such inspection. The pan and tilt camera shall be operative in 100% humidity conditions, and have a high resolution lens capable of scanning 360-degree circumference and 270-degree on a horizontal axis to televise sewers and service connections. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner.

The investigation shall involve visual observation showing the running footage, manhole to manhole section and street or easement at all times on screen in all recordings. The investigation shall be performed at a rate of speed which will allow examination of each manhole, all points of infiltration, cracked or crushed pipe, defective joints, misalignment in line or grade and location of wye openings. As part of the CCTV inspection, all manholes shall be panned to show any and all connections along with its overall condition, the precise locations of each wye and any problems areas. These locations shall be entered on the investigation forms supplied by the Contractor.

The project name, date, time, footage counter and structure to structure section shall be displayed continuously. The camera shall be moved through the sewer in either direction at a rate of speed not to exceed thirty feet (30') per minute, stopping when necessary to permit proper documentation of the sewer's condition. The camera shall be stopped immediately adjacent to all points of infiltration, cracked or broken pipe, defective joints, misalignment in line or grade and location of service connections. The camera shall be rotated to allow viewing of the problem area or into the service connection. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.

A report detailing all notes, wye locations, and other pertinent information shall be made as a part of the CCTV inspection in accordance with NASSCO's PACP ©. The report shall be produced using CCTV inspection software provided by a NASSCO PACP © certified vendor. All CCTV reports shall be downloaded or recorded on board the CCTV vehicle. Formatting and layout, i.e., observations and defect codes shall be NASSCO PACP © standard.

If camera or other equipment becomes seized in a sewer and excavation is required to retrieve the equipment, all excavation, material, backfill and restoration shall be completed at no additional cost to the Owner.

Upon completion of the Work, Contractor shall submit two (2) copies of all DVD(s) along with one ( 1 ) digital copy and two ( 2 ) color copies of inspection reports, with table of contents, in tabbed, three ( 3 ) hole punched binders, to the Owner upon completion of the CCTV inspection. The DVD(s) shall be recorded or edited such that the sewer lines are recorded in consecutive order starting at the downstream manhole and proceeding upstream as shown on the plans. Report(s) shall follow in the same order as the DVD(s). The following information shall be recorded on the reports:

- A. Date
- B. Pipe size, length, material and shape
- C. Engineer or Construction Observer
- D. Owner
- E. Project Name and Number
- F. Location of recording
- G. Upstream and downstream manhole numbers, address of closest house
- H. Camera direction
- I. Direction of flow
- J. Wye location by station quadrant and condition
- K. Type of pipe (sanitary, storm, combined, process, force main)
- L. Type of joint and length between joints
- M. Manhole condition
- N. Drop from manhole rim to invert of sewer
- O. Cross section or profile of sewer
- P. Plan view of sewer and laterals
- Q. Camera operator and PACP © Certification Number
- R. Defects; station, quadrant, type, severity

Any defects noted during CCTV inspection shall be satisfactorily repaired or replaced, by and at the Contractor's expense, and witnessed by the Owner.

Defects shall include, but not be limited to failing low pressure air testing, exceeding infiltration limits, cracked or broken pipe, defective joints, misalignment in line or grade, and visible leaks or infiltration. Additional testing and CCTV inspection shall be performed at each affected segment, from manhole to manhole, subsequent to repair and/or replacement.

### **ARTICLE 3 – SITE CONTROL**

#### **3.01 Project Site**

##### **A. Field Offices and Sheds**

The use of field offices and/or sheds is not required unless otherwise specified. If the Contractor wishes to use a field office and/or shed, the Contractor shall provide and maintain such facilities at no cost to the Owner. The location, occupancy and use of field offices and/or sheds shall be approved by the Owner.

##### **B. Site and Road Cleanliness**

The Contractor shall keep clean all roads used in performance of the Work. Trucks hauling excavated materials, concrete, sand, stone, or other loose materials from or to the site, shall be trimmed and covered to prevent spillage. The Contractor shall be held responsible for Supplier and Sub-Contractor compliance.

If, in the opinion of the Owner or Engineer, cleanliness of the site and adjacent areas impacted by the Work is not progressing in a reasonable manner, Owner and Engineer shall have the right to direct the Contractor to perform corrective action immediately. In the event the Contractor does not immediately perform corrective action, the Owner may order any or all other operations of the Contractor, under this Contract, to cease until the cleanliness of the Work is proceeding in an acceptable manner. Further, if the Contractor fails to perform corrective action immediately, the Owner may perform such work at the Contractor's expense.

##### **C. Dust Control**

All sites, access roads, haul roads, detour roads, and other public and private roads, driveways and parking lots used by the Contractor must be maintained in a dust free condition during the life of this Contract. The control of the dust shall be accomplished by the application of dust control materials and methods of application which are in accordance with the requirements of the regulatory agency having jurisdiction.

Such dust control materials shall be applied as often as is necessary to control the dust.

If, in the opinion of the Owner or Engineer, the Contractor fails to provide adequate dust control, Owner and Engineer shall have the right to direct the Contractor to perform corrective action immediately. In the event the Contractor does not immediately perform corrective action, the Owner may order any or all other operations of the Contractor, under this Contract, to cease until dust is controlled in an acceptable manner. Further, if the Contractor fails to perform corrective action immediately, the Owner may perform such work at the Contractor's expense.

#### D. Noise Control

The Contractor shall comply with all local ordinances pertaining to noise control. Additionally, the Contractor shall employ commonly accepted noise control measures including, but not limited to: adherence to the allowable working hours, use of insulated generators, proper handling of equipment and materials, and consideration of businesses and residential dwellings in the placement of equipment and direction of exhaust ports.

All motorized equipment that must operate outside the allowable working hours shall be insulated. This equipment includes, but is not limited to: generators, pumps and lighted arrow boards that will operate overnight.

### 3.02 Site Access

#### A. Haul Routes

The Contractor shall work with the appropriate government agencies in determining truck routes on this project and shall have such routes approved by same before the routes can be used. Upon approval of the truck routes, the Contractor shall note the condition of the streets and notify the Owner and said government agencies in writing, where deficiencies are present. It shall thereafter be the responsibility of the Contractor to maintain the truck routes for the period of time such routes are used by the Contractor.

Any road damaged by the Contractor's operations shall be repaired by the Contractor at no cost to the Owner. Road repairs shall be in accordance with the standards of the road agency having jurisdiction or the property owner.

#### B. Temporary Roads / Drives

The Contractor shall provide and maintain temporary drives, parking areas, roads, alleys and sidewalks used during construction in a satisfactory and usable condition until completion and acceptance of final restoration.

#### C. Emergency Vehicles, Buses and Services

The Contractor shall notify the local police and fire departments, school districts, private schools, and all public transportation agencies 72 hours prior to closing or barricading of any street. The Contractor shall erect "Road Closed to Thru Traffic" signs, and designate a suitable detour approved by the road agency having jurisdiction.

The Contractor shall maintain access for emergency vehicles throughout the site and maintain access to all public and franchise utilities for the duration of the project. The Contractor shall accommodate the continuation of regular services such as mail delivery and rubbish pick up.

#### D. Pedestrian and ADA Access

##### 1. Pedestrian Access

The Contractor shall accommodate pedestrian access during performance of the Work. The Contractor shall erect signs and designate an acceptable alternate route if a pedestrian cross walk is closed or access to homes or businesses are impacted.

##### 2. Americans with Disabilities Act (ADA) Access

The Contractor shall not impede ADA access during performance of the Work. The Contractor shall make provisions to provide ADA access, in accordance with ADAAG, PROWAG and the MMUTCD, on designated alternate routes if a pedestrian cross walk is closed or access to homes or businesses are impacted.

#### E. Traffic Control and Maintenance

During the progress of the Work, the Contractor shall accommodate vehicular and pedestrian traffic, except as otherwise specified herein.

All Work shall be performed in a neat and satisfactory manner, and interference with the normal flow of traffic shall be kept to a minimum. Driveways and streets disturbed shall be replaced as soon as each crossing is made.

No street may be closed or partially barricaded without prior permission from the authority having jurisdiction. Such permission shall be in writing, and a copy thereof shall be delivered to the Owner prior to the closing or barricading of any street. Safety precautions shall be observed at all times.

The Contractor shall place and maintain traffic control devices in accordance with the Michigan Manual of Uniform Traffic Control Devices, current edition. Failure to comply with this requirement will result in the Owner shutting down the Work until the Contractor has provided the necessary protection. In addition, if required by the authority having jurisdiction, the Contractor shall provide flagmen for the directing of traffic.

The Contractor shall be responsible for all damage to the Work. The Engineer and Owner may order the damaged portion immediately removed and replaced by and at the Contractor's expense. The Contractor's responsibility for the maintenance of traffic control devices and for protecting the Work shall not cease until the Work has been accepted by the Owner.

### **3.03 Soil Erosion and Sedimentation Control**

The intent of the Soil Erosion and Sedimentation Control Act is to minimize the transfer and deposit of sediment to drains, streams, rivers and lakes. The Contractor shall obtain a soil erosion and sedimentation control permit from the local regulatory agency and pay all fees associated with the permit. The Contractor is expected to conduct his operation in accordance with the approved plans and permit.

Prior to final site review ALL structures and sewers in the line of Work, and adjacent thereto subject to receiving any type of foreign material during construction operations, shall be inspected by the local regulatory agency and/or Owner. Structures showing evidence of foreign material shall be cleaned by the Contractor at no additional cost to the Owner. If a structure shows evidence of sufficient foreign material to suggest migration into the sewer, as determined by the local regulatory agency or Owner, the Contractor shall clean the impacted sewer at no additional cost to the Owner. A construction observer will verify the acceptance of each structure and/or sewer when cleaning is completed.

### **3.04 Existing Drainage and Sewage**

If it is necessary in the execution of the Work to interrupt existing surface drainage, adequately sized temporary drainage facilities shall be provided until the existing drainage facilities are restored. The construction of all temporary drainage facilities shall be performed at no additional cost to the Owner.

The flow in all existing drains, storm sewers and sanitary sewers shall be maintained at full capacity, at the Contractor's expense, unless otherwise provided for in the Contract Documents.

### **3.05 Temporary Project Identification Signage**

The Contractor is not required to provide and erect a temporary project identification sign unless otherwise specified. If the Contractor proposes to erect such a sign, a written request and shop drawings must be submitted to the Owner for approval. The use, location, size, materials, lettering and mounting of any temporary project identification signs must be approved in writing by the Owner. If approved, the Contractor shall be responsible for maintaining the sign in good condition throughout the life of the Project and for removal of the sign at completion of the Work.

### **3.06 Survey Staking**

The Engineer will provide control points and construction staking in accordance with the provisions of this section. Any additional lines, levels or construction staking required by the Contractor to perform the Work shall be established by the Contractor at no additional cost to the Owner.

The Contractor shall carefully review the staking provided and compare the information shown on the construction survey stakes with the information shown on the drawings and provided on the cutsheets. The Contractor shall inform the Engineer of any apparent discrepancies before proceeding with the Work.

The Contractor shall utilize appropriate surveying instruments operated by qualified, competent personnel to maintain horizontal and vertical control for construction. If the method being used by the Contractor fails to give proper alignment and grade control to the Work, the Engineer will be empowered to order the Contractor to use such other method(s) as will provide adequate control.

#### A. Scheduling Notification

The Contractor shall notify the Engineer a minimum 48 hours prior to requiring any staking. Notification must be made by contacting the Engineer at (586) 726-1234. Communication with the crew, although recommended for mutual understanding of the requested service, is not sufficient notification.

#### B. Cutsheets

Cutsheets will be a copy of the survey crew's construction staking notes. Cutsheets will be available for distribution the following day from the Engineer.

#### C. Horizontal and Vertical Control Points (Benchmarks)

Horizontal and vertical control points will be provided for the use of survey, Contractor and construction observation personnel. The Contractor shall be responsible for preserving all control points. In the case of willful or careless disturbance, the Contractor shall be responsible for all expenses associated with reestablishing control points and shall also be responsible for delays and errors caused by their unnecessary loss or disturbance. If a control point must be disturbed in the normal course of the Work, the Contractor shall inform the Engineer a minimum 24 hours prior to disturbance.

#### D. Construction Staking

The Engineer will provide line and grade staking appropriate for each individual type of improvement being constructed. The Contractor shall be responsible for preserving all construction staking. In the case of willful or careless disturbance, the Contractor shall be responsible for all expenses associated with restaking and shall also be responsible for delays and errors caused by their unnecessary loss or disturbance.

It is recommended the Contractor review the following survey procedures prior to project commencement.

##### 1. Utility Staking

Proposed public utilities, excluding franchises, will be provided with offset stakes noting station and grade at intervals not to exceed one hundred (100) feet. Centerline lath and offset stakes with station and grade will be provided for all utility structures and appurtenances. Offset stakes

with station only will be provided for limits of sand backfill areas.

Proposed public utilities, excluding franchises, will be provided with offset stakes noting station and grades at conflicts identified on the plans.

Proposed public utilities, excluding franchises, will be provided with centerline lath at all tap locations and offset stakes noting station only for tees, bends and pipe deflections.

Sanitary service leads will be staked for new sanitary sewers. Short side service leads will be staked with offset stakes noting station. The centerline of long side leads will be staked with offset stakes noting station and end of lead stakes noting invert elevation.

Open drains will be staked with station and grade along the top of bank with references to the different elevations of the drain section. Additional stakes with station and grade will be provided at all deflections in the drain.

Each end of proposed bores and tunnels will be provided with centerline lath and offset stakes noting utility pipe invert elevation (or top of pipe elevation for water mains).

##### 2. Pavement

Pavement construction staking will only be provided along one side of the proposed pavement. Offset stakes noting station and grade will be provided as follows:

- Intervals not to exceed fifty (50) feet
- Intervals not to exceed twenty five (25) feet for curvilinear sections.
- High points, low points and grade breaks
- Points of Curvature (PC) and Points of Tangency (PT)

Radius points will be set for all curves with radius of fifty (50) feet or less. Stakes for public utility crossings will be provided after the sub-grade has been cut to grade. Super elevated and asymmetrical pavement sections will be provided with offset stakes

noting station and grade along each side of the proposed pavement.

### 3. Sidewalks

Sidewalks will be provided with offset stakes noting station, for alignment only, at intervals not to exceed one hundred (100) feet. Offset stakes noting grade will only be provided at locations with critical grades noted on the plans. Additional offset stakes noting station will be provided at locations with unique plan alignment.

## **ARTICLE 4 – UTILITY CONSTRUCTION**

### **4.01 General**

These construction requirements are intended to provide general construction guidance for elements of the Work that are not otherwise specified or referenced in the MDOT Standard Specifications. These requirements do not supersede the requirements of other agencies having jurisdiction or requirements outlined in the Contract specifications, special provisions and drawings.

### **4.02 Utility Conflicts**

The Contractor shall verify locations and depths of all existing utilities in advance of operations and shall notify the Engineer immediately if there is less than 18" minimum vertical clearance between existing and proposed utilities.

During the construction, the Contractor shall protect and support all utilities that are encountered and use extreme caution when operating near any and all overhead and/or buried utilities.

Generally the location of proposed utilities on the plans will be followed, but in the event the Owner desires to alter the alignment to avoid unforeseen conflicts or to ease the burden of installation, the alteration shall be revised upon the direction of the Engineer. The Contractor shall not arbitrarily alter the location of proposed utilities. Owner and Engineer approval must be obtained for any location revision proposed by the Contractor. The Owner, however, reserves the exclusive right to determine the feasibility of such an alteration and to so order.

If an alteration of proposed utility location entails an increase or decrease in the cost of construction, said revised cost must be approved prior to constructing the utility. If the utility is in the public road right-of-way, the consent of the right-of-way owner must also be obtained prior to any change in location.

### **4.03 Excavation**

Excavation shall be interpreted to mean and include the following: clearing the work site, loosening and removing all material of any characteristic which may be encountered, whether wet or dry to the depth required, and disposal of all surplus material. Excavation shall also include all collateral work necessary to complete the excavation as required, including but not limited to: sheeting, shoring, bracing, trimming, clearing, grubbing, tree removal within and adjacent to the area being excavated, supporting structures above and below ground, and removal, handling and disposal of both groundwater and surface water. **Excavations and earth moving operations shall not commence until soil erosion measures are in place according to the permit.**

All Work shall be done to line and grade as required in the Contract Documents and in accordance with grade stakes set by the Engineer. Prior to construction, the Contractor shall verify the line and grade stakes as set by the Engineer and immediately notify the Engineer of any discrepancies.

#### A. Site Preparation

Site preparation includes protecting and maintaining all existing features intended to remain in place, including but not limited to, conduits, wires, pipes, sewers, drains, fences, hydrants, pavements, sidewalks, trees, shrubs, landscape work, and lawns, and the removal of other items. Site preparation also includes providing and maintaining all facilities required to protect the Work, adjacent property, and the public from damage, injury, or loss.

#### B. Included Materials

Excavation shall include all materials encountered. Any unforeseen obstacles such as buried trees or timbers, abandoned utilities, metal objects, concrete masses, rocks, boulders, stones or any debris encountered shall be removed as work included in the construction, unless otherwise provided in the Contract Documents.

#### C. Pipe Clearance

Rocks, boulders, stones over two inches (2") in diameter and other buried materials shall be removed to provide a clearance of at least six inches (6") from any part of the proposed utility.

#### D. Utility Trench

The excavation shall be of sufficient widths and depths to provide adequate room for

construction, installation of the utility to line, grade, and dimensions called for on the plans, and to meet applicable safety regulations. In order to reduce the load on the proposed underground utilities and to avoid possible failures from excessive loads, the width of the trench shall be a minimum width to allow the backfill to be placed and compacted properly as shown in the bedding and/or trench details on the utility standard detail sheet.

#### 1. Open Trench

The Contractor shall limit open excavation by consistently backfilling completed utility installations to grade so that not more than 100 feet of trench shall be open at one time.

#### 2. Undercutting

Where, through the Contractor's construction procedure or because of poor existing ground conditions it is impossible to maintain alignment and/or grade properly, the Contractor shall excavate below the required grade and replace with appropriate suitable material.

Replacement material for all excess material removed shall be crushed stone or crushed concrete as approved by the Engineer. The cost of the additional excavation and placement of crushed material up to twelve inches (12") below the standard bedding depth shall be the responsibility of the Contractor and the cost shall be included in the Work. If additional excess excavation and material below twelve inches (12") is required and ordered by the Engineer, the Contractor shall be reimbursed for the additional work and the cost of said additional work shall be negotiated prior to construction unless otherwise provided for in the Contract Documents.

#### E. Stockpiling of Excavated Material

Excavated materials to be used for backfill shall be temporarily stored along the trench, in a manner that will not cause damage to trees, shrubs, fences, or other property, nor that will endanger the trench by imposing too great a load thereon. Distances from the edge of the trench shall be in accordance with current safety regulations.

#### F. Disposal of Excavation Materials

The materials excavated and not suitable or needed for backfilling shall be removed from the site and properly disposed of by the Contractor at their sole discretion, responsibility and expense.

#### G. Sheeting, Bracing and Shoring

The Contractor shall furnish, place and maintain any sheeting, bracing and shoring required by law to properly support the sides of the excavation and to prevent all movement, caving or squeezing of the soil. The Contractor shall protect pavement or utilities outside of the trench or pit. The Contractor shall assume full liability for the adequacy of all supports and site safety.

As the trench is backfilled, all sheeting, bracing and shoring shall be removed in such a manner to prevent the caving in of the sides of the excavation or any damage to the pipe or structure unless the sheeting, bracing and shoring is specified to be left in place. Where required to protect the Work, adjacent structures or property, sheeting, bracing and shoring shall be left in place, but shall be cut off at a depth determined by the Engineer.

Any voids left by the removal of said materials shall be filled with compacted sand. All underground pipes, conduits and structures of every kind that may be encountered during the progress of the Work shall be shored up and fully protected from damage.

The Contractor shall receive no additional compensation for sheeting, shoring or bracing, whether removed or left in place, unless otherwise provided for in the Contract Documents.

When a trench box is used, the bottom of the box shall ride above the top of the pipe. The Contractor shall secure the installed pipe to prevent pipe movement when the box is moved.

#### H. Dewatering

The Contractor shall provide and maintain adequate pumping and drainage facilities for the prompt removal and disposal of water from trenches or other excavations at all times during the construction of the Work. The Contractor shall submit a dewatering plan to the Engineer for review of well placement and discharge.

The excavation shall be kept dry until the backfilling and required testing has been completed. The Contractor shall receive no additional compensation for providing, maintaining, or operating any dewatering or drainage facilities unless otherwise provided for in the Contract Documents.

During construction, no trench water shall be allowed to enter the pipe either during construction or when work is not in progress. To prevent trench water and soils from entering the pipe when work is not in progress, all open ends of pipe or fittings shall be covered. No pipe shall be laid in water unless specifically permitted by the Engineer.

#### 1. Excessive Water

In water-bearing sand, quicksand or ground containing an excessive amount of water, the Contractor shall provide, install, maintain, and operate suitable deep wells, well points, tight sheeting, connecting manifolds, and reliable pumping equipment to operate same to insure proper construction of the Work. The Contractor shall fill all well holes with Bentonite upon the completion of dewatering operations.

#### 2. Discharge

Contractor shall comply with the sedimentation control requirements of the local agency having jurisdiction and obtain all required permits. Contractor shall utilize measures to prevent the discharge of sediments, including but not limited to, discharge through a filter bag.

Drainage or discharge lines shall be connected to adjacent storm water drains or extended to nearby water courses wherever possible. In any event, all pumping and drainage shall be done without damage to any paved surface or other property, public or private, and without interference with the rights of the public or private property owners. No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer installation.

#### 3. Access

The Contractor shall be responsible for ensuring site access requirements during dewatering operations.

#### 4. Existing Wells

The Contractor shall be responsible for providing potable water to all residents whose drinking water well is inoperable due to dewatering, unless otherwise provided for in the Contract Documents.

#### **4.04 Jacked in Place Steel Pipe**

When jacked in place steel pipe is specified on the plans or directed by the Engineer, it is intended to be accomplished with the use of a conventional boring pit operation. This includes a horizontal boring machine, auger and steel casing.

Bore items will only be paid if the work item is actually performed. If the Contractor proposes an alternate method of protecting trees or utility poles, or if it is determined the affected trees or utility poles can be removed, a price for the alternate will be negotiated prior to the start of the work. A Contract Modification will be issued to pay for the alternate method and to reduce the quantity for the associated bid items. Sheeting, shoring, bracing, and dewatering of the entry and receiving pit shall be included in the Jacked in Place Steel Pipe bid item.

##### A. General

During pipe jacking operations, the augers shall not extend beyond the end of the casing and the casing shall not be pushed unless the auger is turning. The auger head shall be four inches (4") behind the end of the casing.

##### B. Casing Material

Steel pipe casings shall meet the requirements of ASTM A-139, Grade B material. The casing shall be new pipe prepared for field welding of circumferential joints. The outside diameter and wall thickness of the casing pipe shall meet the minimum requirements set forth in Section 909 of the MDOT Standard Specifications for Construction.

The inside diameter of all other casing pipes shall be at least six inches (6") larger than the largest outside diameter of the carrier pipe. The casing diameter and wall thickness shown on the detailed plans shall govern in case of a conflict with these specifications.

##### C. Skids and Bracing

Skids, position braces and blocking braces shall be strapped to the carrier pipe prior to installing inside of a casing. All skids and braces shall be

wolmanized timber and notched to accommodate the steel strapping bands. Alternate skid and bracing materials may be used with Engineer approval or if specified by the government agency having jurisdiction.

#### D. Casing Fill and Sealing

Both ends of the casing pipe shall be sealed by bulkhead, with brick and mortar, after installation of the underground utility within the casing. The space between the carrier and casing pipe shall be filled with lean grout or flowable fill.

The lean grout or flowable fill shall be supplied in conformance with the "Guide Specification for Controlled Low Strength Materials (CLSM)" published by the National Ready Mixed Concrete Association and the referenced standards therein. It shall have an unconfined compressive strength of greater than thirty pounds per square inch (>30 psi) and less than one hundred fifty pounds per square inch (< 150 psi). The material must allow for excavation with non-mechanical equipment.

Alternate methods of filling and sealing the casing pipe may be used with Engineer approval.

The bore pits shall be filled to the spring line of the carrier pipe with suitable bedding material to adequately support the carrier pipe and prevent shearing at the ends of the casing pipe.

### **4.05 Backfill**

Backfill materials, methods, and requirements shall meet the MDOT Standard Plans R-83 series, and the MDOT Standard Specifications, unless otherwise noted herein, shown on the drawings or as required by other agencies.

#### A. Unsuitable Material

All backfill material shall be free from cinders, ashes, refuse, vegetable or organic matter, boulders, rocks or stones, or other materials which, in the opinion of the Engineer are unsuitable. Frozen material shall not be used as backfill.

#### B. Bedding and Initial Backfill

Unless otherwise directed, all utility excavation shall be backfilled at least to a point one foot

(1') above the underground utility pipe immediately after installation.

Bedding and initial backfill material, from a minimum four inches (4") below the underground utility pipe to a point one foot (1') above the top of the pipe, shall be in accordance with the Standard Bedding Detail on the applicable utility Standard Detail Sheet. This backfill shall be placed in six inch (6") layers and compacted to ninety-five percent (95%) of the maximum unit weight.

#### C. Trench Backfill

Trench backfill in areas within the influence of sidewalks or vehicular traffic shall be placed in layers not to exceed twelve inches (12") in thickness and thoroughly compacted to ninety-five percent (95%) of the maximum density as determined by the Modified Proctor Method.

Trench backfill under areas not subject to vehicular or pedestrian traffic shall be any natural or otherwise approved material that can be compacted to the required density and contains no organic material. Backfill shall be placed in layers not to exceed twelve inches (12") in thickness and thoroughly compacted to ninety percent (90%) of the maximum density as determined by the Modified Proctor Method.

#### D. Temporary Surfacing

For paved streets or other paved areas, unless the Contractor restores the permanent pavement immediately following the completion of backfilling as the construction proceeds, the Contractor shall construct and maintain a temporary surface suitable for traffic. Unless otherwise specified or required by another agency such as the County Road Commission or MDOT, temporary surfacing shall consist of nine inches (9") of compacted MDOT 22A or 21AA and three inches (3") of cold patch asphalt surfacing which shall be rolled to correspond with the adjacent pavement. Said temporary surfacing shall be maintained in acceptable condition until the pavement is replaced.

### **4.06 Construction in Fill Sections and Embankments**

All sites shall be completely land balanced to rough grade prior to utility installation. Backfill shall be placed in layers not to exceed twelve inches (12") in thickness and thoroughly compacted to not less than

ninety-five percent (95%) of maximum density as determined by the Modified Proctor Method.

## **ARTICLE 5 – RESTORATION**

### **5.01 Green Belt**

#### **A. Landscaping**

All trees, hedges, lights, and any other landscaping not specified for removal shall be protected during construction. If removal is required to construct any portion of the Project, the item removed shall be carefully removed and replaced prior to the completion of the Project. Trees, hedges and other living plants shall be kept alive after removal and replanted. The Contractor shall be responsible to reestablish the plant and shall be responsible for construction related damage or death of the tree or plant for the life of the maintenance bond.

The restoration for the entire project includes all labor, equipment and materials to completely restore anything affected by construction to a condition equal to or better than existing prior to construction. This includes, but is not limited to mailboxes, field tiles, ditching, lawns, shrubs, trees, plantings, sprinkler systems, landscaping, fences, yard decorations, brick pavers and existing utilities.

The Contractor shall carefully determine all restoration items in the construction area and make allowance for their cost in their bid.

#### **B. Turf Restoration**

Turf restoration consists of preparing all areas disturbed by the Work, and applying topsoil, fertilizer, sod and/or seed and mulch to those areas. All work shall be performed in accordance with Section 816 of the current MDOT Standard Specifications for Construction, except as modified herein.

All materials used for Turf Restoration shall meet the requirements of Section 917 of the current MDOT Standard Specifications for Construction.

Materials included in sodding are:

- Topsoil Surface, Furn, 3 inch
- Fertilizer, Chemical Nutrient, CI A
- Sodding
- Water, Sodding/Seeding

Materials included in seeding are:

- Topsoil Surface, Furn, 3 inch
- Fertilizer, Chemical Nutrient, CI A
- Seeding, Mixture THM (Turf Loamy to Heavy)
- Mulch and Mulch Anchoring
- Water, Sodding/Seeding

The Contractor shall perform Turf Restoration for all areas disturbed by the Work. All Turf Restoration shall be sodding, unless seeding is authorized by the Engineer.

Areas to be sodded/seeded shall be shaped and compacted per Section 816 of the current MDOT Standard Specifications for Construction. Place topsoil to the minimum depth indicated above to meet finish grade. If the area being restored requires more than the minimum depth indicated above to meet the finish grade, this additional depth must be filled using topsoil.

All areas disturbed by the Contractor and/or Subcontractor beyond the normal construction limits of the Work shall be sodded or seeded in accordance with this requirement at the direction of the Engineer.

Watering of new sod and seed shall be in accordance with the current MDOT Standard Specifications for Construction.

Water for this use may be obtained from the local water supply only with written permission from the local water system authority.

#### **C. Irrigation System**

The Contractor shall be responsible for verifying the location of, and protecting or removing and salvaging, portions of any existing privately owned and maintained irrigation systems which are located within the construction area. In addition, the Contractor shall be responsible for the re-installation of sprinkler lines and spray-heads after the Work has been completed, prior to performing final restoration work.

Once the irrigation lines and spray heads have been located, the Contractor shall carefully cut and remove the existing lines at a point just outside the limits of earth excavation. Temporary plugs shall be inserted into all open ends of pipe, which shall be capable of withstanding any line pressure from the

remaining portion of the irrigation system which is left undisturbed.

All existing spray heads and irrigation piping may be salvaged for later use in replacing the irrigation system. The work shall be performed by Contractors familiar with all aspects of irrigation system installation with a minimum of three (3) years' experience in such line of work.

### **5.02 Aggregate Surfaces**

Construction of aggregate surfaces shall include all labor, equipment and material required to furnish, place and compact an MDOT certified aggregate surface course of the thickness and gradation specified by the local road authority having jurisdiction.

All materials shall meet the requirements of Section 902 of the current MDOT Standard Specifications for Construction. All material shall meet the gradation requirements for 23A dense graded aggregates as specified in Table 902-1 or as required by the local road authority having jurisdiction.

The work shall be performed in accordance with the requirements for Aggregate Surface Course and/or Class II Shoulder and Approaches – 23A as outlined in Sections 306 and 307 of the current MDOT Standard Specifications.

Place and compact the material in a manner that does not damage adjacent paved surfaces, if present. Maintain aggregate material in a smooth, stable condition and provide dust control. Scarify the existing surface full-width to a minimum depth of two inches (2") when adding aggregate material. Maintain compacted aggregate flush with each course of Hot Mix Asphalt (HMA) placed, if applicable. Grade aggregate material to provide positive drainage at all times. Aggregate material shall be compacted to 95 percent of the maximum unit weight at moisture content not greater than optimum.

### **5.03 Paved Surfaces**

#### **A. Concrete Pavement Repair**

##### 1. General

All work shall be done in accordance with the current Standard Specifications for Construction of the Michigan Department of Transportation (MDOT) except as otherwise modified herein.

##### 2. Sawcutting

Where pavement is to be removed the concrete shall be saw cut full depth prior to removal. If the pavement is found to have not been saw cut full depth, the Contractor shall saw cut full depth a new joint beyond the limits of the previous saw cut joint and remove and replace the additional concrete at the Contractor's expense.

### 3. Removal

Concrete to be removed may vary in thickness and may include HMA overlay of various thicknesses and adjacent curbs. Pavement removal shall include all labor and equipment required for sawcutting, breaking, removing and disposing the existing pavement. The Contractor shall be responsible for protecting the pavement abutting the repair area.

### 4. Preparation of Base for Concrete Pavement Repair

Excavation shall be made to the required depth and width that will permit forming including a 4" minimum aggregate base, unless otherwise specified by the local road authority having jurisdiction. All base material shall be crushed limestone meeting the gradation requirements for 21AA dense graded aggregates as specified in MDOT Table 902-1. The material shall be shaped and compacted to the required density

### 5. Subgrade Undercutting

Where directed by the Engineer, the Contractor shall perform subgrade undercutting to remove unsuitable subgrade material. This work shall conform to the specifications set forth in the current MDOT Standard Specifications or as directed by the Engineer.

### 6. Portland Cement Concrete Mixture

All concrete furnished for the Work shall be a Portland cement concrete mixture that is resistant to excessive expansion caused by alkali-silica reactivity (ASR). Concrete shall generally meet the requirements of Grade P1, 5.6 sack concrete, modified as follows. The Contractor shall provide a concrete as modified by the Special Provisions.

All concrete mix designs shall be presented to the Engineer at the preconstruction

meeting along with which of the two options the Contractor will use to prevent ASR.

#### 7. Concrete Sidewalk & Drive Approaches

Construction of concrete sidewalk and/or drive approaches shall include all labor, material and equipment required to compact the grade, form, and install non-reinforced concrete. Sidewalk forms shall provide for a transverse slope of ¼ inch per foot towards the roadway unless otherwise specified. Standard concrete walks shall be 4" thick and concrete walk/drive approaches shall be 6" thick.

#### 8. Concrete Sidewalk Ramp

Sidewalk ramps at all public and private road crossings shall be constructed barrier free with a "Detectable Warning Surface". The work shall be in accordance with current MDOT Standard plans.

The work shall also include all necessary excavation, forming, and additional non-reinforced concrete required to make the first five (5) feet of the ramp, adjacent to any pavement, 8" thick. A 1" thick expansion joint shall be placed in the concrete surface where the thickness transitions down to 4" thick.

The Contractor shall provide detectable warning surfaces as specified by the local agency having jurisdiction and shall comply with all requirements of the ADAAG, the PROWAG and the MMUTCD.

#### 9. Concrete Pavement

Concrete pavement repair shall include all labor, material and equipment required to compact the grade, form, and replace the concrete pavement and/or integral curb. Pavement thickness and reinforcing shall be as specified by the local road authority having jurisdiction.

#### 10. Concrete Curb and Gutter

Concrete curb and gutter shall include all labor, material and equipment required to compact the grade, form and replace the concrete curb and gutter. The curb shall be formed to match the existing curb shape.

#### 11. Forms

Forms shall be of wood or metal, straight and free from warp, and of sufficient strength to resist springing during the process of depositing concrete against them. The forms shall be the full depth of the concrete. Gaps between forms, overlapping forms, or forms not providing a straight edge will not be accepted. Forms shall be firmly staked to the required line and grade.

#### 12. Curing

Application of curing compound shall be required in accordance with the current MDOT Standard Specifications on all concrete pavement.

#### 13. Concrete Protection

It is the responsibility of the Contractor to protect the placed concrete from vandalism, traffic, rain, cold weather, markings or other such damage.

Contractor shall take such precautions as are necessary to protect the concrete from damage caused by rain. If concrete is being poured when rain commences, the Contractor shall stop pouring immediately and cover all concrete that may be subject to damage.

Damaged concrete will be removed and replaced at no cost to the Owner.

#### 14. Grouting

All honeycombed areas shall be grouted as directed by the Engineer prior to backfilling.

#### 15. Joints

The Contractor shall provide all labor, equipment and materials required to construct concrete pavement joints as specified by the local road authority having jurisdiction, or in accordance with Section 603 and Section 914 of the current MDOT Standard Specifications, except as modified herein.

Hook bolt sizing and spacing shall be in accordance with MDOT Standard Plans, R-44 series.

## B. Hot Mix Asphalt (HMA) Repair

### 1. General

HMA paving materials shall be furnished and placed on a prepared base to match existing lines and grades unless otherwise shown in the Contract Documents.

### 2. Sawcutting

Where HMA is to be removed the pavement shall be saw cut full depth prior to removal. If the pavement is found to have not been saw cut full depth, the Contractor shall saw cut full depth a new joint beyond the limits of the previous saw cut joint and remove and replace the additional HMA at the Contractor's expense.

### 3. Removal

HMA to be removed may vary in thickness and may include underlying concrete pavement of various thicknesses and adjacent curbs. Pavement removal shall include all labor and equipment required for sawcutting, breaking, removing and disposing the existing pavement. The Contractor shall be responsible for protecting the pavement abutting the repair area.

### 4. Preparation of Base for HMA Pavement Repair

Excavation shall be made to the required depth and width that will accommodate the aggregate base and pavement thickness required by the local road authority having jurisdiction. All base material shall be crushed limestone meeting the gradation requirements for 21AA dense graded aggregates as specified in MDOT Table 902-1. The material shall be shaped and compacted to the required density.

### 5. Subgrade Undercutting

Where directed by the Engineer, the Contractor shall perform subgrade undercutting to remove unsuitable subgrade material. This work shall conform to the specifications set forth in the current MDOT Standard Specifications or as directed by the Engineer.

### 6. Materials

All HMA Mixtures shall be in accordance with the MDOT Standard Specifications for Construction. Reclaimed asphalt will be

allowed in any of the mixes. Unless otherwise specified in the Contract Documents or by the local road authority having jurisdiction, HMA materials shall have the following minimum application rates or a total thickness equal to the existing pavement, whichever is greater:

- a.) Roadways (8" minimum thickness).  
  
Base Course material shall be HMA, 2C applied at a rate of 440 lbs/syd.  
  
Leveling Course material shall be HMA, 3C applied at a rate of 220 lbs/syd.  
  
Top Course material shall be HMA, 4C applied at a rate of 220 lbs/syd.
- b.) Residential driveway approaches (3" minimum thickness).  
  
Leveling Course and Top Course material shall be HMA, 36A applied in two (2) lifts consisting of a leveling course applied at a rate of 165 lbs/syd. and a top course applied at a rate of 165 lbs/syd.
- c.) Commercial driveway approaches (6" minimum thickness).  
  
Base and leveling course material shall be HMA, 3C, applied in two (2) lifts at a rate of 220 lbs/syd., per each lift.  
  
Top course shall be HMA 13A applied at a rate of 220 lbs /syd.
- d.) Parking lots (4" minimum thickness).  
  
Leveling Course material shall be HMA, 3C applied at a rate of 275 lbs/syd.  
  
Top Course material shall be HMA, 36A applied at a rate of 165 lbs/syd.
- e.) Performance Grade Binder  
  
The Performance Grade Binder for all mixtures shall be: 64-22.

f.) Aggregate Wear Index

The required Aggregate Wear Index (AWI) number shall be 220, minimum.

g.) Bond Coats

Bond Coats shall be applied in accordance with the current MDOT Standard Specifications for Construction. Bond Coats shall be SS-1h applied at a rate of 0.05 to 0.10 gal/square yard.

7. Construction

Do not place HMA or apply bond coat when moisture on the existing surface will prevent satisfactory curing.

8. HMA Protection

It is the responsibility of the Contractor to protect the placed HMA from vandalism, traffic, or other markings or damage.

Damaged HMA will be removed and replaced at no cost to the Owner.

## **APPENDIX A – REPORT ON GEOTECHNICAL INVESTIGATION**



Report on Geotechnical Pavement  
Investigation

**Grosse Pointe Woods  
2021 Streets Program  
Allard Avenue,  
Christine Court,  
Hampton Road, and  
Roslyn Road  
Grosse Pointe Woods,  
Michigan**

Prepared for:

Anderson, Eckstein & Westrick, Inc.  
51301 Schoenherr Road  
Shelby Township, Michigan 48315

G2 Project No. 200937  
December 8, 2020



CONSULTING  
GROUP

December 8, 2020

Mr. Ross Wilberding, P.E.  
Anderson, Eckstein & Westrick, Inc.  
51301 Schoenherr Road  
Shelby Township, Michigan 48315

Re: Report of Geotechnical Pavement Investigation  
Grosse Pointe Woods 2021 Streets Program  
Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937

Dear Mr. Wilberding,

In accordance with your request, we have completed the geotechnical pavement investigation for the proposed pavement reconstruction of Allard Avenue, Christine Court, Hampton Road, and Roslyn Road as part of the Grosse Pointe Woods 2021 Streets Program located within the City of Grosse Pointe Woods, Michigan. In addition, new water main will be constructed along Christine Court. This report presents the results of our observations and analyses and our recommendations for pavement reconstruction, pavement design, utility design, and construction considerations as they relate to the geotechnical conditions along the alignment of the proposed pavement reconstruction and new water main construction.

As always, we appreciate the opportunity to be of service to Anderson, Eckstein & Westrick, Inc., on this project and look forward to discussing the recommendations presented. In the meantime, if you have any questions regarding this report or any other matter pertaining to the project, please let us know.

Sincerely,

**G2 Consulting Group, LLC**

Jeffrey M. Hayball, P.E.  
Project Engineer

Noel J. Hargrave-Thomas, P.E.  
Principal

Jason B. Stoops, P.E.

JMH/NJHT/JBS/ljv

Enclosures

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## EXECUTIVE SUMMARY

We understand the project includes pavement reconstruction of four (4) roadways as part of the Grosse Pointe Woods 2021 Streets Program: Allard Avenue between Harper Avenue and Chester Avenue, Christine Court north of Vernier Road to the dead end, Hampton Road between Mack Avenue and Marter Road, and Roslyn Road between Mack Avenue and Marter Road. In addition, new water main will be constructed along Christine Court. The new water main is proposed to be installed using open-cut installation methods. It is assumed the new water main will have an invert depth between 5 and 6 feet below existing grades.

The existing pavements consist of bituminous concrete and/or Portland cement concrete pavement and an underlying aggregate base. The bituminous concrete ranges in thickness from 2 to 7-1/2 inches. The Portland cement concrete measures 7-1/4 to 9 inches in thickness within borings A-1 through A-3 and C-1 and C-2. Approximately 2 and 6 inches of natural sandy gravel with trace silt is present below the bituminous concrete within boring A-4 and C-1, respectively. The aggregate base along Hampton and Roslyn Roads consists of crushed limestone and ranges in thickness from 6-1/2 to 19-1/2 inches.

Stiff silty clay fill underlies the pavement section within borings C-1 and C-2, extending to depths ranging from 2 to 2-1/2 feet. Loose sand fill is present below the silty clay fill within boring C-2 and the pavement section within boring R-6, extending to an approximate depth of 3-1/2 feet within boring C-2 and the explored depth of 5 feet within boring R-6. Native stiff to very stiff silty clay is present below the pavement section and/or fill soils within the remaining borings and extends to the explored depth of 5 and 8 feet.

The existing subgrade soils along Allard Avenue, Roslyn Road, and Christine Court consist of silty clay with moisture contents ranging from 18 to 33 percent, liquid limits of 47 and 48 percent, and plasticity indexes of 29 and 30 percent. These values indicate the silty clay subgrade may become unstable under construction traffic. For improved subgrade stabilization, the existing subgrade may be treated with lime.

Based on the results of our analyses, we recommend a minimum bituminous concrete pavement section consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 10 inches of MDOT 21AA dense graded material aggregate base. If the subgrade is treated with lime, we recommend a minimum pavement section for the pavement reconstruction consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 6 inches of MDOT 21AA dense graded material aggregate base. We recommend the proposed Portland cement concrete pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 6 inches of MDOT 21AA dense graded aggregate base course, supported on a lime treated subgrade. Where lime stabilization is not utilized, we recommend the proposed pavement reconstruction pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 8 inches of MDOT 21AA dense graded aggregate base course. An alternate pavement section is presented for Hampton and Roslyn Roads in the Pavement Recommendations section of this report

No groundwater was encountered within the soil borings performed during or upon completion of drilling operations. We anticipate the contractor can control groundwater seepage with properly constructed sumps and pumps if encountered.

Temporary unsurcharged trench excavations for the proposed open-cut water main installation operations must be sloped back at a minimum of 1-1/2H:1V (horizontal: vertical) within the existing loose granular soils and 1H:1V within the stiff to very stiff cohesive soils.

This summary is not to be considered separate from the entire text of this report, with all the conclusions and qualifications mentioned herein. Details of our analysis and recommendations are discussed in the following sections and in the Appendix of this report.



## PROJECT DESCRIPTION

We understand the project includes pavement reconstruction of four (4) roadways as part of the Grosse Pointe Woods 2021 Streets Program. The following roadways are included within the proposed project: Allard Avenue between Harper Avenue and Chester Avenue, Christine Court north of Vernier Road to the dead end, Hampton Road between Mack Avenue and Marter Road, and Roslyn Road between Mack Avenue and Marter Road. It is our understanding it is desired to reconstruct the existing pavements with a new bituminous concrete pavement section with new Portland cement concrete curbs or a new Portland cement concrete pavement section with integral curbs. No information regarding the type or volume of traffic that utilized the existing roadway is currently available, however, we anticipate traffic will be primarily cars with the occasional delivery truck, refuse truck, emergency vehicle, and snow removal truck traffic.

In addition, new water main will be constructed along Christine Court. The new water main is proposed to be installed using open-cut installation methods. It is assumed the new water main will have an invert depth between 5 and 6 feet below existing grades.

The purpose of our investigation is to determine and evaluate the general pavement and subsurface conditions within the roadway alignments and develop general recommendations for the proposed pavement improvements, pavement design, and new water main construction.

## SCOPE OF SERVICES

The field operations, laboratory testing, and engineering report preparation were performed under direction and supervision of a licensed professional engineer. Our services were performed according to generally accepted standards and procedures in the practice of geotechnical engineering in this area. Our scope of services for this project is as follows:

1. We drilled a total of eighteen (18) pavement core/hand auger soil borings for the proposed project. Pavement core/hand auger borings A-1 through A-4 were performed along Allard Avenue, extending to a depth of 5 feet each. Pavement core/hand auger soil borings C-1 and C-2 were drilled through the pavements of Christine Court and extended to a depth of 8 feet below existing grades. Pavement core/hand auger soil borings H-1 through H-6 were performed along alternating sides of Hampton Road, extending to a depth of 5 feet below grade. Pavement core/hand auger soil borings R-1 through R-6 were drilled through the pavement of alternating sides of Roslyn Road and extended to a depth of 5 feet each. We measured the existing pavement section materials (bituminous concrete and aggregate base) and identified the type and condition of subgrade soils.
2. We performed laboratory testing on samples obtained from the soil borings. Laboratory testing included visual engineering classification, grain-size distribution, Atterberg Limits, natural moisture content, and unconfined compressive strength determinations.
3. We prepared this engineering report which includes our evaluation of the subsurface conditions along the proposed roadway alignments and our recommendations for pavement reconstruction and new water main construction.

## FIELD OPERATIONS

Anderson, Eckstein & Westrick, Inc. (AEW) in conjunction with G2 Consulting Group, LLC (G2), selected the number, depth, and location of the soil borings. The soil borings were located in the field by a G2 representative by use of GPS assisted mobile technology in conjunction with conventional taping methods. The approximate soil boring locations are presented on the Soil Boring Location Plan, Plate Nos. 1 through 3. Ground surface elevations were not available at the time of the field investigation. GPS locations of each of the soil boring locations are provided on the soil boring logs.

We used a gas powered core rig equipped with a 4-inch diameter diamond-tipped core barrel to core the pavement locations. Pavement cores were drilled through the full depth of the existing pavement structure to obtain an accurate determination of the pavement thickness.

Hand auger borings were performed using a 3-inch diameter hand auger. Within each hand-auger boring, soil samples were obtained at 2-1/2 feet, 5 feet, and 7-1/2 feet and at transitions in soil types. The soil samples were placed in sealed containers in the field and brought to the laboratory for testing and classification.

A Dynamic Cone Penetrometer (DCP) test was performed within each hand auger boring at depths of 2-1/2 feet, 5 feet, and 7-1/2 feet to evaluate the consistency of the in-situ soil. DCP testing involves driving a 1-1/2 inch diameter cone with a 45° vertex angle into the ground using a 15-pound weight dropped 20 inches after the cone is seated into the bottom of the hand auger borehole. The Dynamic Cone Penetrometer is driven successive 1-3/4 increments. The blow counts for each 1-3/4 inch increment are presented on the individual hand-auger soil boring logs.

During drilling operations, a G2 staff engineer maintained logs of the encountered subsurface conditions, including changes in stratigraphy and observed groundwater levels to be used in conjunction with our analysis of the subsurface conditions. The final hand-auger boring logs are based on the field logs and laboratory soil classification and testing. After completion of boring operations, the boreholes were backfilled with excavated soil and capped with cold patch.

## **LABORATORY TESTING**

Representative soil samples were subjected to laboratory testing to determine soil parameters pertinent to pavement design and site preparation. An experienced geotechnical engineer classified the samples in general conformance with the Unified Soil Classification System.

Laboratory testing included grain-size distribution, Atterberg Limits, natural moisture content, and unconfined compressive strength determinations. Grain-size distribution was determined in general conformance with ASTM C 136 method of testing. Atterberg limits were determined in accordance with ASTM D 4318 "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils". The unconfined compressive strengths were determined using a spring-loaded hand penetrometer. The hand penetrometer estimates the unconfined compressive strength to a maximum of 4-1/2 tons per square foot (tsf) by measuring the resistance of the soil sample to the penetration of a calibrated spring-loaded cylinder.

The results of the moisture content and unconfined compressive strength laboratory tests are indicated on the soil boring logs at the depths the samples were obtained. Atterberg limits are shown graphically on Figure No. 19 in the Appendix. The grain size analyses are present in the Appendix as Grain Size Distribution, Figure No. 20. We will hold the soil samples for 60 days from the date of this report. If you would like the samples, please let us know.

## **EXISTING PAVEMENT CONDITIONS**

### **Allard Avenue (Borings A-1 through A-4)**

The existing pavements consist of bituminous concrete and an underlying Portland cement concrete pavement or aggregate base. Within borings A-1 through A-3 the bituminous concrete ranges in thickness from 2 to 5 inches and is underlain by Portland cement concrete measuring 7-1/4 to 8-1/2 in thickness. The bituminous concrete at boring A-4 is 7 inches thick with approximately 2 inches of natural sandy gravel aggregate base.



Moderate severity transverse and longitudinal reflective cracking is present along approximately half of the pavement surface. It appears some crack sealing, cold patching, and full depth replacement patching have been performed in the past. The pavements along the roadway are crowned, allowing surface runoff water to drain onto Portland cement gutters present along the edge of the pavements. Portland cement concrete gutters drain into catch basins constructed into the gutter line. The gutters are generally in poor condition as some sections of gutter have cracked or settled. The condition and construction of the existing catch basins were not visible during our site visit.

#### **Christine Court (Borings C-1 and C-2)**

The existing pavements consist of Portland cement and an underlying aggregate base. The Portland cement concrete measures 7-1/2 and 9 inches thick. Approximately 6 inches of a natural sandy gravel with trace silt aggregate base underlies the Portland cement concrete within boring C-2. No distinguishable aggregate base layer was observed beneath the pavement within boring C-1.

Moderate severity joint and transverse cracking is present along less than half of the pavement surface. It appears some crack sealing has been performed in the past. The pavements along the roadway are crowned, allowing surface runoff water to drain onto Portland cement gutters present along the edge of the pavements. Portland cement concrete gutters drain into catch basins constructed into the gutter line. The gutters are generally in poor condition as some sections of gutter have cracked or settled. The condition and construction of the existing catch basins were not visible during our site visit.

#### **Hampton Road (Borings H-1 through H-6)**

The existing pavements consist of bituminous concrete and an underlying aggregate base. The bituminous concrete ranges in thickness from 3-1/4 to 7 inches. The aggregate base consists of crushed limestone sandy gravel with little silt and ranges in thickness from 11 to 19-1/2 inches. A grain size analysis was performed on samples of the aggregate base obtained from boring H-1. Test results indicate the aggregate base does not meet the gradation requirements of MDOT 21AA dense graded material due to an excessive amount of material passing the No. 200 sieve (clay and silt).

Moderate severity transverse, longitudinal, and fatigue cracking is present along approximately half of the pavement surface. It appears some crack sealing, cold patching, and full depth replacement patching has been performed in the past. It is our understanding the pavements along the south side of Hampton Road have been replaced during new utility construction performed in the past. The pavements along the roadway are crowned, allowing surface runoff water to drain onto Portland cement gutters present along the edge of the pavements. Portland cement concrete gutters drain into catch basins constructed into the gutter line. The gutters are generally in poor condition as some sections of gutter have cracked or settled. The condition and construction of the existing catch basins were not visible during our site visit.

#### **Roslyn Road (Borings R-1 through R-6)**

The existing pavements consist of bituminous concrete and an underlying aggregate base. The bituminous concrete ranges in thickness from 3-3/4 to 7-1/2 inches. The aggregate base consists of crushed limestone gravel with trace sand and ranges in thickness from 6-1/2 to 15 inches. A grain size analysis was performed on samples of the aggregate base obtained from boring R-5. Test results indicate the aggregate base does not meet the gradation requirements of MDOT 21AA dense graded material due to an insufficient amount of material passing the No. 4 sieve (sand).

Moderate severity transverse, longitudinal, and fatigue cracking is present along approximately half of the pavement surface. It appears some crack sealing, cold patching, and full depth replacement patching has been performed in the past. The pavements along the roadway are crowned, allowing surface runoff water to drain onto Portland cement gutters present along the edge of the pavements.



Portland cement concrete gutters drain into catch basins constructed into the gutter line. The gutters are generally in poor condition as some sections of gutter have cracked or settled. The condition and construction of the existing catch basins were not visible during our site visit.

## **EXISTING SUBSURFACE CONDITIONS**

### **General**

The stratification depths shown on the soil boring logs represent the soil conditions at the boring locations. Variations may occur between borings. Additionally, the stratigraphic lines represent the approximate boundaries between soil types. The transition may be more gradual than what is shown. We have prepared the boring logs on the basis of laboratory classification and testing as well as field logs of the soils encountered.

The Soil Boring Location Plan, Plate Nos. 1 through 3, Soil Boring Logs, Figure Nos. 1 through 18, Atterberg Limits Results, Figure No. 19, Grain Size Distribution, Figure No. 20, and Photographic Documentation, Figure Nos. 21 through 29, are presented in the Appendix. The soil profiles described above are generalized descriptions of the soil conditions at the boring locations. General notes defining the nomenclature used on the boring logs and elsewhere in this report are presented on Figure No. 30.

### **Allard Avenue (Borings A-1 through A-4)**

Native silty clay is present below the pavement section of the borings and extends to the explored depth of 5 feet. The native silty to very stiff clay is stiff in consistency with natural moisture contents ranging from 26 to 33 percent, a liquid limit content of 48 percent, plasticity index of 29 percent, and unconfined compressive strengths ranging from 2,000 to 4,000 to pounds per square foot (psf).

### **Christine Court (Borings C-1 and C-2)**

Silty clay fill underlies the pavement section within the borings and extends to depths ranging from 2 to 2-1/2 feet. Sand fill is present below the silty clay fill within boring C-1 and extends to an approximate depth of 3-1/2 feet. Native silty clay underlies the fill soils and extends to the explored depth of 8 feet.

The silty clay fill is stiff in consistency with a moisture content of 28 percent and unconfined compressive strengths ranging from 2,500 to 3,000 psf. The sand fill is loose in compactness with a Dynamic Cone Penetrometer (DCP) Test N-value of 10 blows per 1-3/4 inch drive. The native silty clay is stiff in consistency with natural moisture contents ranging from 24 to 25 percent and unconfined compressive strengths ranging from 3,000 to 3,500 psf.

### **Hampton Road (Borings H-1 through H-6)**

Native silty clay is present below the pavement section of the borings and extends to the explored depth of 5 feet. The native very stiff clay is stiff in consistency with natural moisture contents ranging from 17 to 19 percent, a liquid limit content of 36 percent, plasticity index of 20 percent, and unconfined compressive strengths ranging from 4,000 to 5,000 to pounds per square foot (psf).

### **Roslyn Road (Borings R-1 through R-6)**

Sand fill underlies the pavement section within boring R-6 and extends to the explored depth of 6 feet. Native silty clay is present below the pavement section within the remaining borings and extends to the explored depth of 5 feet.

The sand fill is loose in compactness with DCP Test N-values of 6 and 7 blows per 1-3/4 inch drive. The native very stiff clay is stiff to very stiff in consistency with natural moisture contents ranging from 18 to



23 percent, a liquid limit content of 47 percent, plasticity index of 30 percent, and unconfined compressive strengths ranging from 2,500 to 5,000 to pounds per square foot (psf).

## **GROUNDWATER CONDITIONS**

No measurable groundwater was observed within the borings during or upon completion of drilling operations. Fluctuations in perched and long-term groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation. It should be noted that groundwater observations made during drilling operations in predominantly cohesive soils are not necessarily indicative of the static groundwater level. This is due to the low permeability of such soils and the tendency of drilling operations to seal off the natural paths of groundwater flow.

## **PAVEMENT EVALUATION AND RECOMMENDATIONS**

### **General**

It is our understanding the existing pavement along the four (4) roadway alignments will be reconstruction with either a new bituminous concrete or Portland cement concrete pavement section. Therefore, we recommend completely removing the existing pavements, cutting the subgrade down to the proposed new subgrade elevation, evaluated the exposed subgrade soils, performing any potential undercuts, potentially lime stabilizing the exposed subgrade, then constructing the new pavement section.

### **Pavement Subgrade Preparation**

The existing pavements and curbs should be removed along the roadway alignments. We anticipate subgrade cuts will be necessary to accommodate the addition of the recommended dense graded aggregate base materials.

The exposed subgrade should be graded to promote effective drainage and then compacted. Once a rough grade has been achieved, the exposed subgrade should be evaluated for stability. We recommend subgrade soils be proof rolled using a fully loaded tri-axle dump truck. We recommend granular subgrade soils be proof compacted with a large smooth drum roller. We recommend the vibratory setting on the smooth drum roller be turned off when within 25 feet of the existing building. We recommend the smooth drum roller make a minimum of 10 passes across the granular subgrade. Any unstable or unsuitable areas noted should be improved by additional compaction or removed and replaced with engineered fill.

Subgrade undercuts, if required, should be evaluated by a qualified engineering technician to determine if subgrade stabilization is necessary. We recommend that undercut excavations, where required, be backfilled with the stockpiled aggregate base material or MDOT 21AA placed in an engineered manner. A drain tile should be placed at the deepest portion of catch undercut and connected to the closest catch basin to prevent trapped water from collecting in the granular cut soils. Lift thicknesses should not exceed 9 inches. All engineered fill should be compacted to a density of at least 95 percent of the maximum density determined by the Modified Proctor (ASTM D 1557) method of testing. All engineered fill material should be placed and compacted at approximately the optimum moisture content. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

### **Lime Stabilization Option**

The existing subgrade soils along Allard Avenue and Roslyn Road consist of native silty clay with moisture contents ranging from 18 to 33 percent, liquid limits of 47 and 48 percent, and plasticity indexes of 29 and 30 percent. The silty clay soils within Christine Court has moistures ranging from 24 to 28 percent. These values indicate the silty clay subgrade will become unstable under construction traffic.



For improved subgrade stabilization, the existing subgrade may be treated with lime. Lime stabilization consists of mixing hydrated lime with silty clay subgrade to decrease the in-situ moisture content and increase the shear strength and effective subgrade reaction value. Typically, the upper 12 to 14 inches of subgrade soil can be mixed with approximately 5 percent lime and compacted in place. The actual lime percentage should be determined by a lime stabilization mix design.

Particular attention should be paid during compaction operations in areas around existing manholes, catch basins, and where curbs and gutters are present. Within these areas, the soils have probably been exposed to greater than normal water infiltration and freeze-thaw heave over the pavement life. It is likely these soils have become unstable and will also need to be removed and replaced with MDOT Class II granular material in accordance with MDOT Type II undercutting procedures.

Engineered fill, if required, may consist of imported sand meeting the gradation requirements of MDOT Class II structural fill. All engineered fill should be compacted to a density of at least 95 percent of the maximum density obtainable by the Modified Proctor (ASTM D 1557) method of testing.

### **Alternate Pavement Recommendations**

Significant subgrade instability may be encountered due to the presences of silty clay subgrade with high moisture contents and Atterberg limits. We have provided lime stabilization recommendations for these soils. In consideration of these subgrade soils, we provide an alternate pavement recommendation consisting of removing the existing bituminous concrete from Hampton and Roslyn Roads, fine grading and compacting the existing aggregate base, and constructing a 5 inch bituminous section.

### **Pavement Design**

We performed pavement design analyses in accordance with the "AASHTO Guide for Design of Pavement Structures". Based on the presence of the silty clay subgrade soils, we have provided design pavement sections based on an effective modulus of subgrade reaction,  $k$ , of 50 pounds per cubic inch (pci) and an effective subgrade resilient modulus of 4,000 pounds per square inch (psi).

No information regarding the type or amount of traffic along the existing four (4) roadways were available upon completion of this report. In addition, the City of Grosse Pointe Woods does not have a minimum design pavement section for local side streets. However, we assume traffic along the roadways is primarily cars with the occasional garbage and delivery truck. For evaluation purposes, we have designed the pavement section on an estimated of 100,000 18-kip equivalent single-axle loads (ESALs) over a 20-year design life. If any actual traffic volume information becomes available, G2 Consulting Group should be notified so we can reevaluate our recommendations.

For the proposed new pavement section, we estimated a serviceability loss of 2.0, a standard deviation of 0.49 for flexible pavements and 0.39 for rigid pavements, a reliability factor of 0.95. load transfer coefficient of 3.2, a drainage coefficient of 1.0, a Portland cement concrete modulus of rupture of 670 psi, and an elastic modulus of the Portland cement concrete slab of 4,200,000 psi.

Based on the results of our analyses, we recommend a minimum bituminous concrete pavement section for the pavement reconstruction consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 10 inches of MDOT 21AA dense graded material aggregate base. If the subgrade is treated with lime, we recommend a minimum pavement section for the pavement reconstruction consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 6 inches of MDOT 21AA dense graded material aggregate base.

Our alternate pavement section consists of 2 inches of MDOT 5E1 Bituminous wearing course and 3 inches of MDOT 4E1 bituminous leveling course supported on the existing aggregate base.

Based on the results of our analyses, we recommend the proposed Portland cement concrete pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 6 inches of MDOT 21AA dense graded aggregate base course, supported on a lime treated subgrade. Where lime stabilization is not utilized, we recommend the proposed pavement reconstruction pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 8 inches of MDOT 21AA dense graded aggregate base course.

All pavement materials are specified within the 2012 Standard Specifications for Construction from the Michigan Department of Transportation. The concrete pavement materials are described in Section 601. The aggregate materials for the subbase and concrete are described in Section 902. The bituminous pavement materials are described in Section 501 and can be assigned a structural coefficient number of 0.42. Any imported MDOT 21AA material can be assigned a structural coefficient number of 0.14.

### **Pavement Drainage**

Proper pavement drainage is essential for cohesive subgrade soils. The addition and subtraction of moisture can cause a volume change and instability. We recommend edge drains be provided along curbs, since they can become a source of water infiltration into the pavement subgrade. Such drains should extend to minimum depths of 4 inches below the bottom of the MDOT 21 AA dense graded aggregate layer. These drains should be connected to nearby catch basins. The pavement should be properly sloped to promote effective surface drainage and prevent water from ponding. We also recommend pavement base materials consist of non-frost-susceptible aggregates.

### **Pavement Maintenance**

Regular timely maintenance should be performed on the pavement to reduce the potential deterioration associated with moisture infiltration through surface cracks and pavement joints. The owner should be prepared to seal the cracks with a hot-applied elastic crack filler as soon as possible after cracking develops and as often as necessary to block the passage of water to the subgrade soils. In addition, routing joints maintenance should be performed to prevent early joint deterioration.

## **UNDERGROUND UTILITY CONSTRUCTION RECOMMENDATIONS**

### **General**

We anticipate the proposed water main will be constructed along Christine Court with invert depths ranging from 5 to 6 feet below existing grades. At the time of this report, open cut excavations are being considered for the installation of proposed new water main. Once the proposed pipeline profiles become available and the pipeline installation methods for each segment of the pipeline alignment have been established, G2 should be notified so that we can review our recommendations presented herein.

### **Groundwater Control**

No groundwater was encountered within the soil borings performed along Christine Court during or upon completion of drilling operations. We anticipate the contractor can control groundwater seepage with properly constructed sumps and pumps if encountered.

### **Excavations**

Temporary uncharged trench excavations for the proposed open-cut water main installation operations must be sloped back at a minimum of 1-1/2H:1V (horizontal: vertical) within the existing loose granular soils and 1H:1V within the stiff to very stiff cohesive soils. Where seepage from excavation cuts is observed, the slopes must be flattened sufficiently to achieve stability, but in no case



left steeper than 3H:1V at and below the seepage level. The soils exposed in slope faces should be inspected by qualified personnel so modifications of the slopes can be made if variations in the soil or water conditions occur. If sufficient space for open cut consideration is not available trench box shoring may be used.

Trench box shoring may be used provided some lateral deflection of adjacent soils can be tolerated. If a trench box is used, excavations should be performed from within the trench box, such that no unsupported vertical cut is allowed to exist. A trench box is not recommended where adjacent utilities, roadways, or structures are located less than a lateral distance delineated by a plane extending upward from the bottom edges of the excavation at a 1H:1V slope.

All excavations should be safely sheeted, shored, sloped, or braced in accordance with MI-OSHA requirements. If material is stored or equipment is operated near the excavation, stronger shoring must be used to resist the extra pressure due to the superimposed loads. Care should always be exercised when excavating near existing buildings, roadways, or utilities to avoid undermining. In no case should excavations extend below the level of adjacent structures or utilities unless underpinning is planned.

### **Pipeline Support**

Based on the observed subsurface conditions and the anticipated invert elevations, we expect the proposed underground utilities will generally be supported on stiff silty clay soils. In general, these soils are adequate for support of the utilities. The exposed subgrade should be visually evaluated for stability prior to the backfilling of the construction excavations.

### **Trench Backfill**

Clean granular engineered fill should be used to backfill around the water main and the remainder of the utility trench. The engineered fill or bedding should be placed up to the springline of the pipe, while making sure that the void beneath the haunches of the pipe are completely filled. The initial lift should be compacted using light-duty compaction equipment, such as walk-behind vibratory plate compactors, and should be compacted in a manner that will not disturb the pipe alignment. The next lift of engineered fill may then be placed to 9 inches above the top of the pipe. Again, light-duty compaction equipment should be used to complete the compaction of the engineered fill.

After the bedding material and initial lift of backfill has been placed and compacted, the remainder of the trench should be backfilled in an engineered manner. The engineered fill should consist of MDOT Class II material.

Backfill should be placed in loose layers not to exceed 9 inches in thickness and should be mechanically compacted to achieve a density of at least 95 percent of the material's maximum dry density as determined by the Modified Proctor compact test (ASTM D1557) or in accordance with the Michigan Department of Transportation "Density Testing and Inspection Manual" dated April 8, 2010. Granular engineered fill material should be placed and compacted at moisture contents within 2 percent above or below the optimum moisture content.

### **GENERAL COMMENTS**

We have formulated the evaluations and recommendations presented in this report relative to site preparation, pavement improvements, and water main construction on the basis of data provided to us relating to the location, type, and grade for the proposed site. Any significant change in this data should be brought to our attention for review and evaluation with respect to the prevailing subsurface conditions.

The scope of the present investigation was limited to evaluation of subsurface conditions for the construction of the proposed pavement improvements and new water main construction and other



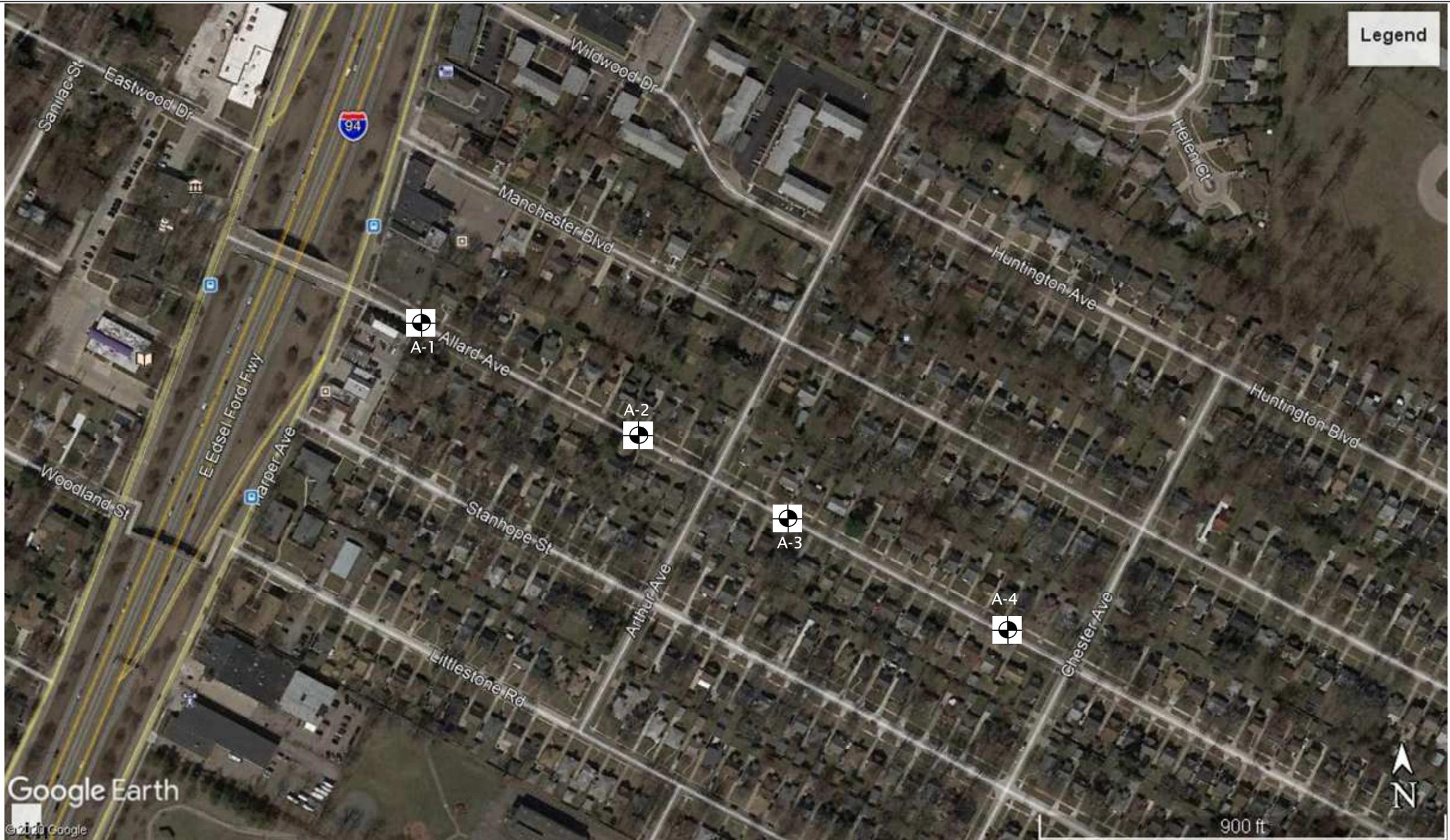
related aspects of the proposed project. No chemical, environmental, or hydrogeological testing or analysis were included in the scope of this investigation. If changes occur in the design, location, or concept of the project, the conclusions and recommendations contained in this report are not valid unless G2 Consulting Group, LLC reviews the changes. G2 Consulting Group, LLC will then confirm the recommendations presented herein or make changes in writing.

We have based the analyses and recommendations submitted in this report upon the data from soil borings performed at the approximate locations shown on the Soil Boring Location Plan, Plate Nos. 1 through 3. This report does not reflect variations that may occur between the actual boring locations. The nature and extent of any such variations may not become clear until the time of construction. If significant variations then become evident, it may be necessary for us to re-evaluate our report recommendations.

Soil conditions at the site could vary from those generalized on the basis of soil borings made at specific locations. It is, therefore, recommended that G2 Consulting Group, LLC be retained to provide soil engineering services during the water main and roadway construction phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations. Also, this allows design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.

## APPENDIX

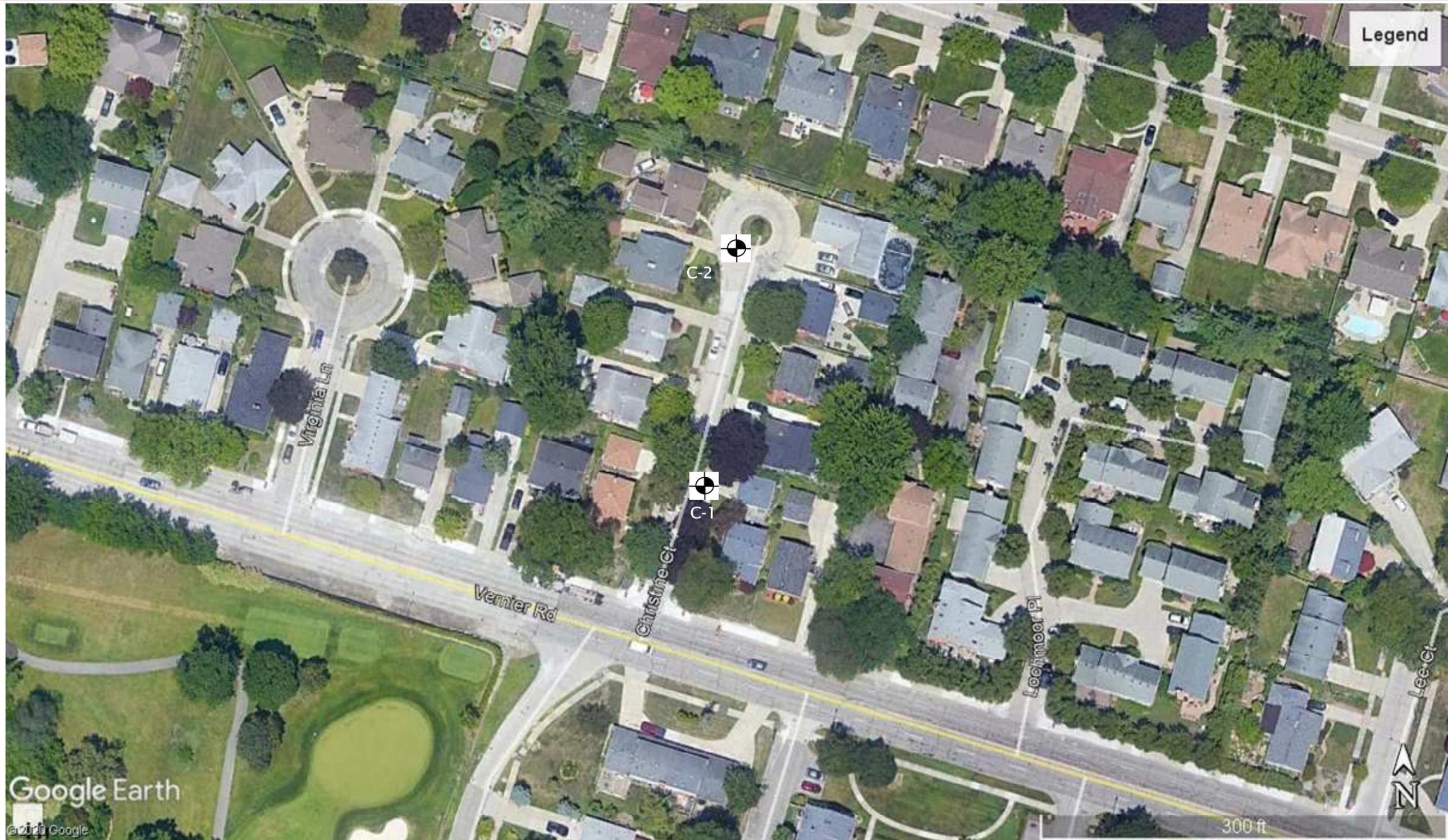
Soil Boring Location Plan	Plate Nos. 1 through 3
Soil Boring Logs	Figure Nos. 1 through 18
Atterberg Limit Results	Figure No. 19
Grain-Size Distribution	Figure No. 20
Photographic Documentation	Figure Nos. 21 through 29
General Notes Terminology	Figure No. 30



**Legend**

 Pavement Core/Hand Auger Soil Borings performed by G2 Consulting Group, LLC on November 20, 2020

<b>Soil Boring Location Plan</b>	
Grosse Pointe Woods 2021 Streets Program Allard Avenue: Harper to Chester Grosse Pointe Woods, Michigan	
	Project No. 200937
	Drawn by: JMH
	Date: 11/30/20
Scale: NTS	Plate No. 1



Legend



Google Earth  
©2020 Google

Legend

 Pavement Core/Hand Auger Soil Borings performed by G2 Consulting Group, LLC on November 20, 2020

<b>Soil Boring Location Plan</b>	
Grosse Pointe Woods 2021 Streets Program Christine Court: North of Vernier Grosse Pointe Woods, Michigan	
	Project No. 200937
	Drawn by: JMH
	Date: 11/30/20
Scale: NTS	Plate No. 2



**Legend**

 Pavement Core/Hand Auger Soil Borings performed by G2 Consulting Group, LLC on November 20, 2020

<b>Soil Boring Location Plan</b>			
Grosse Pointe Woods 2021 Streets Program Hampton and Roslyn: Mack to Marter Grosse Pointe Woods, Michigan			
	Project No. 200937		
	Drawn by: JMH		
	Date: 11/30/20	Plate No. 3	
	Scale: NTS		

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-1

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.432594° Longitude: -82.921418°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3					
		Portland Cement Concrete (8-1/2 inches)	1.0					
		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	10	30.6		3000*
5			5.0	AS-2	13	25.8		4000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Allard Avenue  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 1

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.431951° Longitude: -82.919830°



Soil Boring No. A-2  
**CONSULTING GROUP**

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5 inches)	0.4					
		Portland Cement Concrete (8-1/2 inches)	0.8					
		Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	10	30.1		3000*
5			5.0	AS-2	10	26.9		3000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Allard Avenue  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 2

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-3

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.431491° Longitude: -82.918724°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (2 inches)	0.2					
		Portland Cement Concrete (7-1/4 inches)	0.8					
		Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	7	31.4		2000*
5			5.0	AS-2	8	29.0		2500*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Allard Avenue  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 3

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-4

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.430786° Longitude: -82.916990°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (7 inches)						
		Natural Aggregate Base: Brown Sandy Gravel with trace silt (2 inches)	0.6 0.8					
		Stiff Brown and Gray Silty Clay with trace silt and gravel		AS-1	7	33.4		2000*
5		End of Boring @ 5 ft	5.0	AS-2	10	27.0		3000*
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Allard Avenue  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 4

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.440247° Longitude: -82.891887°



Soil Boring No. C-1  
**CONSULTING GROUP**

SUBSURFACE PROFILE			SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (9 inches)	0.8					
		Fill: Stiff Brown and Gray Silty Clay with trace sand and gravel	2.0					
		Fill: Loose Brown Sand with trace silt and gravel	3.5	AS-1	10	27.7		3000*
5		Stiff Gray Silty Clay with trace sand and gravel	5	AS-2	10	24.9		3000*
		Stiff Gray Silty Clay with trace sand and gravel	8.0	AS-3	12	24.1		3500*
		End of Boring @ 8 ft						
10			10					

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Total Depth: 8 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Christine Court  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 5

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. C-2

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.440783° Longitude: -82.891738°

SUBSURFACE PROFILE			SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (7-1/2 inches)	0.6					
		Natural Aggregate Base: Brown Sandy Gravel with trace silt (6 inches)	1.1					
		Fill: Stiff Brown and Gray Silty Clay with trace sand, gravel, and glass fragments	2.5	S-1	8	28.0		2500*
5		Stiff Gray Silty Clay with trace sand and gravel	5	S-2	10	24.2		3000*
				AS-3	12	23.8		3500*
		End of Boring @ 8 ft	8.0					
10			10					

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Total Depth: 8 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Christine Court  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 6

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.447356° Longitude: -82.904819°



Soil Boring No. **H-1**  
**CONSULTING GROUP**

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5-1/2 inches)	0.4					
		Crushed Limestone Aggregate Base: Gray Sandy Gravel with little silt (11-1/2 inches)	1.5	AS-1				
		Very Stiff Gray Silty Clay with trace silt and gravel		AS-2	13	17.9		4000*
5			5.0	AS-3	17	17.0		5000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 7

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.446806° Longitude: -82.902509°



Soil Boring No. H-2

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4-1/2 inches)	0.3	AS-1				
		Crushed Limestone Aggregate Base: Gray Sandy Gravel with little silt (19-1/2 inches)	2.0	AS-2	13	17.8		4000*
5		Very Stiff Gray Silty Clay with trace silt and gravel	5.0	AS-3	17	17.8		5000*
		End of Boring @ 5 ft						
10								

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, South of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 8

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.446439° Longitude: -82.901043°



Soil Boring No. **H-3**  
**CONSULTING GROUP**

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (6 inches)	0.5					
		Crushed Limestone Aggregate Base: Gray Sandy Gravel with little silt (12 inches)	1.5	AS-1				
		Very Stiff Gray Silty Clay with trace silt and gravel		AS-2	13	18.9		4000*
5		End of Boring @ 5 ft	5.0	AS-3	15	18.0		4500*
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 9

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.445944° Longitude: -82.899006°



Soil Boring No. H-4

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3					
		Crushed Limestone Aggregate Base: Gray Sandy Gravel with trace silt (10-1/2 inches)	1.2	AS-1				
		Very Stiff Gray Silty Clay with trace silt and gravel	5.0	AS-2	15	18.4		4500*
5				AS-3	13	17.3		4000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, South of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 10

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.445651° Longitude: -82.897665°



Soil Boring No. H-5  
**CONSULTING GROUP**

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (7 inches)	0.6	AS-1				
		Crushed Aggregate Base: Gray Sandy Gravel with trace silt (11 inches)	1.5					
		Very Stiff Gray Silty Clay with trace silt and gravel		AS-2	13	19.0		4000*
5			5.0	AS-3	13	18.7		4000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 11

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.445092° Longitude: -82.895430°



Soil Boring No. H-6

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/4 inches)	0.3					
		Crushed Limestone Aggregate Base: Gray Sandy Gravel with trace silt (11-3/4 inches)	1.3	AS-1				
		Very Stiff Gray Silty Clay with trace silt and gravel	5.0	AS-2	13	17.8		4000*
5				AS-3	13	17.2		4000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Hampton Road, South of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 12

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. R-1

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.448364° Longitude: -82.904570°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5-1/4 inches)	0.4					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (7-3/4 inches)	1.1	AS-1				
		Stiff Gray Silty Clay with trace silt and gravel		AS-2	10	21.2		3000*
5			5.0	AS-3	10	21.8		3000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 13

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No. 200937

Latitude: 42.447759° Longitude: -82.902061°



Soil Boring No. R-2  
**CONSULTING GROUP**

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5 inches)	0.4					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (13 inches)	1.5	AS-1				
		Stiff Gray Silty Clay with trace silt and gravel		AS-2	10	22.5		3000*
5			5.0	AS-3	10	19.4		3000*
		End of Boring @ 5 ft						
10								

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, South of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 14

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. R-3

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.447383° Longitude: -82.900596°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-3/4 inches)	0.3					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (8-1/4 inches)	1.0	AS-1				
		Stiff to Very Stiff Gray Silty Clay with trace silt and gravel		AS-2	10	21.7		3000*
5	5.0		5	AS-3	13	20.7		4000*
			End of Boring @ 5 ft					
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 15

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. R-4

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.446897° Longitude: -82.898547°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches)	0.3					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (15 inches)	1.5	AS-1				
		Stiff Gray Silty Clay with trace silt and gravel	5.0	AS-2	8	23.2		2500*
5		End of Boring @ 5 ft	5.0	AS-3	10	22.1		3000*
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, South of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 16

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. R-5

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.446586° Longitude: -82.897292°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (7-1/2 inches)	0.6					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (6-1/2 inches)	1.2	AS-1				
		Very Stiff Gray Silty Clay with trace silt and gravel		AS-2	13	20.0		4000*
5	5.0		5	AS-3	17	17.7		5000*
			End of Boring @ 5 ft					
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, North of Center Line  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 17

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. R-6

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.446045° Longitude: -82.895082°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5 inches)	0.4					
		Crushed Limestone Aggregate Base: Gray Gravel with trace sand (13 inches)	1.5	AS-3				
		Fill: Loose Brown Sand with trace silt and gravel	5.0	AS-1	6			
5		End of Boring @ 5 ft	5.0	AS-2	7			
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 Roslyn Road, South of Center Line

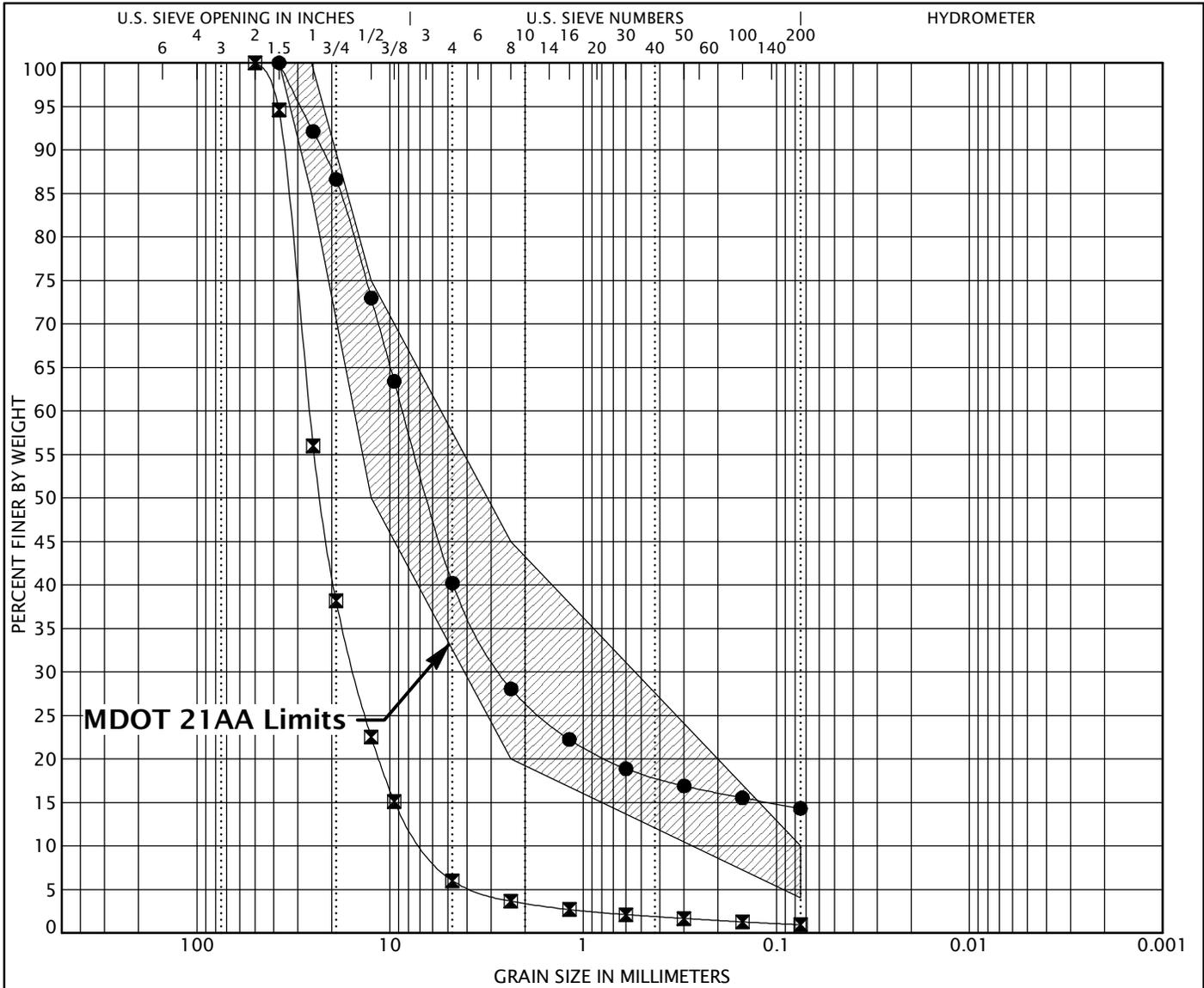
Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Figure No. 18





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Description	LL	PL	PI	Cc	Cu		
● H-1 AS-1	Gray Sandy Gravel with little silt							
☒ R-5 AS-1	Gray Gravel with trace sand				1.39	4.05		
Specimen ID	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● H-1 AS-1	37.5	8.586	2.642		59.8	25.9	14.3	
☒ R-5 AS-1	50	26.075	15.27	6.437	94.0	5.1	0.9	



**GRAIN SIZE DISTRIBUTION**

Project Name: 2021 Grosse Pointe Woods Streets Program

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan

G2 Project No.: 200937

Figure No. 20

US\_GRAIN\_SIZE\_MDOT\_21AA\_200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/7/20

Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 1: Low to moderate severity transverse and longitudinal cracking with cold patching along Allard Avenue near boring A-1. View to the west.



Photograph No. 2: Low to moderate severity transverse and longitudinal cracking with crack sealing along Allard Avenue near boring A-2. View to the west.

Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 3: Low to moderate severity transverse and longitudinal cracking with cold patching and full depth replacement patching along Allard Avenue near boring A-3. View to the west.



Photograph No. 4: Moderate severity transverse and longitudinal cracking with cold patching and full depth replacement patching along Allard Avenue near boring A-4. View to the west.

**Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 5: Moderate severity transverse and joint cracking with crack sealing along Christine Court near boring C-1. View to the north.



Photograph No. 6: Moderate severity transverse and joint cracking with crack sealing along Christine Court near boring C-2. View to the south.

**Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 7: Moderate severity transverse, fatigue and longitudinal cracking with crack sealing and full depth replacement patching along Hampton Road near boring H-1. View to the east.



Photograph No. 8: Moderate severity transverse, fatigue and longitudinal cracking with cold patching, crack sealing, and full depth replacement patching along Hampton Road near boring H-2. View to the east.

**Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 9: Moderate to high severity transverse, fatigue and longitudinal cracking with cold patching, crack sealing, and full depth replacement patching along Hampton Road near boring H-3. View to the west.



Photograph No. 10: Moderate to high severity transverse, fatigue and longitudinal cracking with cold patching and crack sealing along Hampton Road near boring H-4. View to the east.

**Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 11: Moderate severity transverse, fatigue and longitudinal cracking with full depth replacement patching and crack sealing along Hampton Road near boring H-5. View to the east.



Photograph No. 12: Moderate severity transverse, fatigue and longitudinal cracking with full depth replacement patching and crack sealing along Hampton Road near boring H-6. View to the west.

Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 13: Low to moderate severity transverse, fatigue and longitudinal cracking along Roslyn Road near boring R-1. View to the west.



Photograph No. 14: Low to moderate severity transverse, fatigue and longitudinal cracking along Roslyn Road near boring R-2. View to the west.

**Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 15: Moderate severity transverse, fatigue and longitudinal cracking with crack sealing and full depth replacement patching along Roslyn Road near boring R-3. View to the west.



Photograph No. 16: Moderate severity transverse, fatigue and longitudinal cracking with crack sealing and full depth replacement patching along Roslyn Road near boring R-4. View to the west.

Photographic Documentation  
2021 Streets Program  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 17: Moderate severity transverse, fatigue and longitudinal cracking with crack sealing and full depth replacement patching along Roslyn Road near boring R-5. View to the west.



Photograph No. 18: Moderate severity transverse, fatigue and longitudinal cracking with crack sealing and full depth replacement patching along Roslyn Road near boring R-6. View to the west.

## GENERAL NOTES TERMINOLOGY

Unless otherwise noted, all terms herein refer to the Standard Definitions presented in ASTM 653.

### PARTICLE SIZE

Boulders	- greater than 12 inches
Cobbles	- 3 inches to 12 inches
Gravel - Coarse	- 3/4 inches to 3 inches
- Fine	- No. 4 to 3/4 inches
Sand - Coarse	- No. 10 to No. 4
- Medium	- No. 40 to No. 10
- Fine	- No. 200 to No. 40
Silt	- 0.005mm to 0.074mm
Clay	- Less than 0.005mm

### CLASSIFICATION

The major soil constituent is the principal noun, i.e. clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituent (percent by weight)
Trace - 1 to 12%	Trace - 1 to 12%
Adjective - 12 to 35%	Little - 12 to 23%
And - over 35%	Some - 23 to 33%

### COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier, i.e. sandy clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils, i.e. silty clay, trace sand, little gravel.

Consistency	Unconfined Compressive Strength (psf)	Approximate Range of (N)
Very Soft	Below 500	0 - 2
Soft	500 - 1,000	3 - 4
Medium	1,000 - 2,000	5 - 8
Stiff	2,000 - 4,000	9 - 15
Very Stiff	4,000 - 8,000	16 - 30
Hard	8,000 - 16,000	31 - 50
Very Hard	Over 16,000	Over 50

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

Density Classification	COHESIONLESS SOILS Relative Density %	Approximate Range of (N)
Very Loose	0 - 15	0 - 4
Loose	16 - 35	5 - 10
Medium Compact	36 - 65	11 - 30
Compact	66 - 85	31 - 50
Very Compact	86 - 100	Over 50

Relative Density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.

### SAMPLE DESIGNATIONS

- AS - Auger Sample - Cuttings directly from auger flight
- BS - Bottle or Bag Samples
- S - Split Spoon Sample - ASTM D 1586
- LS - Liner Sample with liner insert 3 inches in length
- ST - Shelby Tube sample - 3 inch diameter unless otherwise noted
- PS - Piston Sample - 3 inch diameter unless otherwise noted
- RC - Rock Core - NX core unless otherwise noted

STANDARD PENETRATION TEST (ASTM D 1586) - A 2.0 inch outside-diameter, 1-3/8 inch inside-diameter split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).



Report on Supplemental Geotechnical  
Pavement Investigation

**Grosse Pointe Woods  
2021 Streets Program  
Allard Avenue  
Grosse Pointe Woods,  
Michigan**

Prepared for:

Anderson, Eckstein & Westrick, Inc.  
51301 Schoenherr Road  
Shelby Township, Michigan 48315

G2 Project No. 200937  
January 25, 2021



CONSULTING  
GROUP

January 25, 2021

Mr. Ross Wilberding, P.E.  
Anderson, Eckstein & Westrick, Inc.  
51301 Schoenherr Road  
Shelby Township, Michigan 48315

Re: Report of Supplemental Geotechnical Pavement Investigation  
Grosse Pointe Woods 2021 Streets Program  
Allard Avenue: Harper Avenue to Chester Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937

Dear Mr. Wilberding,

In accordance with your request, we have completed the supplemental geotechnical pavement investigation for the proposed pavement rehabilitation/reconstruction of Allard Avenue between Harper Avenue and Chester Avenue as part of the Grosse Pointe Woods 2021 Streets Program located within the City of Grosse Pointe Woods, Michigan. This report presents the results of our observations and analyses and our recommendations for pavement rehabilitation/reconstruction, pavement design, and construction considerations as they relate to the geotechnical conditions along the alignment of the proposed pavement rehabilitation/reconstruction.

As always, we appreciate the opportunity to be of service to Anderson, Eckstein & Westrick, Inc., on this project and look forward to discussing the recommendations presented. In the meantime, if you have any questions regarding this report or any other matter pertaining to the project, please let us know.

Sincerely,

**G2 Consulting Group, LLC**

Jeffrey M. Hayball, P.E.  
Project Engineer

Noel J. Hargrave-Thomas, P.E.  
Principal

Jason B. Stoops, P.E.  
Associate / Project Manager

JMH/NJHT/JBS/ljv

Enclosures

[g2consultinggroup.com](http://g2consultinggroup.com)

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<b>Ann Arbor</b>	1350 Eisenhower Pl	Ann Arbor, MI 48108	P 734.390.9330	F 734.390.9331
<b>Chicagoland</b>	1186 Heather Dr	Lake Zurich, IL 60047	P 847.353.8740	F 847.353.8742



## EXECUTIVE SUMMARY

This supplemental geotechnical pavement investigation is an evaluation to cold milling the existing bituminous concrete along Allard Avenue and constructing a new bituminous concrete pavement section over the existing Portland cement concrete. The supplemental geotechnical investigation consists of seven (7) additional pavement cores along Allard Avenue to further determine the existing pavement section thickness and general condition. No information regarding the type or volume of traffic that utilized the existing roadway is currently available, however, we anticipate traffic will be primarily cars with the occasional delivery truck, refuse truck, emergency vehicle, and snow removal truck traffic.

The existing pavements consist of bituminous concrete and an underlying Portland cement concrete pavement or aggregate base. Within borings A-1 through A-3 and A-5 through A-11, the bituminous concrete ranges in thickness from 2 to 5 inches and is underlain by Portland cement concrete measuring 6 to 8-1/2 in thickness. The bituminous concrete at boring A-4 is 7 inches thick with approximately 2 inches of natural sandy gravel aggregate base. Slag aggregate is present within the underlying Portland cement concrete within pavement cores A-5 through A-8. Limestone aggregate is present within the underlying Portland cement concrete within pavement cores A-9 through A-11.

The amount of pavement distress appears to be more severe between Arthur Avenue and Chester Avenue, where the slag aggregate Portland cement concrete is generally present. It is common for concrete pavement with slab aggregate to experience high joint deterioration. Based on the observed high severity reflective cracking within the Portland cement concrete with slag aggregate, we anticipate high severity joint cracking within the Portland cement concrete and significant Portland cement slab replacement. Therefore, we recommend the pavement from Arthur Avenue to Chester Avenue be reconstructed.

Given the limestone aggregate and pavement distress along Allard Avenue between Harper Avenue and Arthur Avenue, it is more feasible to cold mill the bituminous concrete and construct a new bituminous concrete pavement section supported on the underlying Portland concrete limestone aggregate pavement. Alternatively, we recommend completely removing the existing pavements along Allard Avenue, cutting the subgrade down to the proposed new subgrade elevation, evaluated the exposed subgrade soils, performing any potential undercuts, potentially lime stabilizing the exposed subgrade, then constructing the new pavement section consisting of 4 inches of new bituminous concrete supported on 10 inches of aggregate base or 7 inches of new Portland cement concrete supported on 8 inches of aggregate base.

We recommend the proposed bituminous concrete overlay option for Allard Avenue from Harper Avenue to Arthur Avenue generally match the existing bituminous concrete thickness, or generally 3-1/2 inches thick. Based on the anticipated traffic volumes, we recommend the overlay consist of 1-1/2 inches of MDOT 5E3 bituminous concrete wearing course and 2 inches of MDOT 4E3 bituminous concrete leveling course, supported on the underlying Portland cement concrete pavement. However, the thickness of the overlay may vary to achieve proper pavement drainage. The lift thickness limits of MDOT 5E3 bituminous concrete range from 1-1/2 to 2 inches as the lift thickness limits of MDOT 4E3 bituminous concrete range from 2 to 2-1/2 inches. Therefore, where more than 4-1/2 inches of bituminous concrete pavement is required, we recommend additional MDOT 4E3 wedge course bituminous concrete be placed as necessary to achieve final grades.

This summary is not to be considered separate from the entire text of this report, with all the conclusions and qualifications mentioned herein. Details of our analysis and recommendations are discussed in the following sections and in the Appendix of this report.



## **PROJECT BACKGROUND/DESCRIPTION**

The original geotechnical pavement investigation for the Grosse Pointe Woods 2021 Streets Program was performed by G2 Consulting Group, LLC, dated December 8, 2020. This geotechnical investigation consisted of 18 pavement core/hand auger soil borings performed along four (4) separate streets (Allard Avenue, Christine Court, Hampton Road, and Roslyn Road) for pavement reconstruction with either new bituminous concrete or Portland cement concrete pavements.

The existing pavements consist of bituminous concrete and/or Portland cement concrete pavement and an underlying aggregate base. The bituminous concrete ranges in thickness from 2 to 7-1/2 inches. The Portland cement concrete measures 7-1/4 to 9 inches in thickness within borings A-1 through A-3 and C-1 and C-2. Approximately 2 and 6 inches of natural sandy gravel with trace silt is present below the bituminous concrete within boring A-4 and C-1, respectively. The aggregate base along Hampton and Roslyn Roads consists of crushed limestone and ranges in thickness from 6-1/2 to 19-1/2 inches.

However, an evaluation to cold milling the existing bituminous concrete along Allard Avenue and constructing a new bituminous concrete pavement section over the existing Portland cement concrete was requested. Therefore, a supplemental geotechnical pavement investigation was authorized by Anderson, Eckstein & Westrick, Inc. (AEW) as field operations were performed on January 13, 2021. The supplemental geotechnical investigation consisted of seven (7) additional pavement cores along Allard Avenue to further determine the existing pavement section thickness and general condition. No information regarding the type or volume of traffic that utilized the existing roadway is currently available, however, we anticipate traffic will be primarily cars with the occasional delivery truck, refuse truck, emergency vehicle, and snow removal truck traffic.

The purpose of our investigation is to determine and evaluate the general pavement and subsurface conditions along Allard Avenue and develop general recommendations for the proposed pavement improvements and pavement design.

## **SCOPE OF SERVICES**

The field operations and engineering report preparation were performed under direction and supervision of a licensed professional engineer. Our services were performed according to generally accepted standards and procedures in the practice of geotechnical engineering in this area. Our scope of services for this project is as follows:

1. We performed an additional seven (7) pavement cores along Allard Avenue. Pavement core A-5 was performed on the opposite side of the road of pavement core/hand auger soil boring A-4. Pavement cores A-6 through A-8 were performed along Allard Avenue between Arthur Avenue and Chester Avenue. Pavement cores A-9 through A-11 were performed along Allard Avenue between Harper Avenue and Arthur Avenue. We measured the existing pavement section materials (bituminous concrete and Portland cement concrete).
2. We prepared this engineering report which includes our evaluation of the pavement conditions along the proposed roadway alignment and our recommendations for pavement rehabilitation/reconstruction.

## **FIELD OPERATIONS**

Anderson, Eckstein & Westrick, Inc. (AEW) in conjunction with G2 Consulting Group, LLC (G2), selected the number and location of the pavement cores. The pavement cores were located in the field by a G2 representative by use of GPS assisted mobile technology in conjunction with conventional taping methods. The approximate soil boring locations are presented on the Soil Boring Location Plan, Plate No. 1. Ground surface elevations were not available at the time of the field investigation. GPS locations



of each of the soil boring locations are provided on the soil boring logs. In addition, the approximate distance north or south of the Allard Avenue centerline is noted on the soil boring logs.

We used a gas powered core rig equipped with a 4-inch diameter diamond-tipped core barrel to core the pavement locations. Pavement cores were drilled through the full depth of the existing pavement structure to obtain an accurate determination of the pavement thickness.

During pavement coring operations, a G2 professional engineer maintained logs of the encountered pavement conditions. The existing pavement core was photographed at each location. After completion of coring operations, the boreholes were backfilled with the pavement core and capped with cold patch.

### **EXISTING PAVEMENT CONDITIONS**

The existing pavements consist of bituminous concrete and an underlying Portland cement concrete pavement or aggregate base. Within borings A-1 through A-3 and A-5 through A-11, the bituminous concrete ranges in thickness from 2 to 5 inches and is underlain by Portland cement concrete measuring 6 to 8-1/2 in thickness. The bituminous concrete at boring A-4 is 7 inches thick with approximately 2 inches of natural sandy gravel aggregate base. Slag aggregate is present within the underlying Portland cement concrete within pavement cores A-5 through A-8. Limestone aggregate is present within the underlying Portland cement concrete within pavement cores A-9 through A-11.

Moderate to high severity transverse and longitudinal reflective cracking and edge cracking is present along more than half of the pavement surface along Allard Avenue between Arthur Avenue and Chester Avenue. Moderate severity transverse and longitudinal reflective cracking is present along approximately half of the pavement surface along Allard Avenue between Harper Avenue and Arthur Avenue.

It appears some crack sealing, cold patching, and full depth replacement patching have been performed in the past. The pavements along the roadway are crowned, allowing surface runoff water to drain onto Portland cement gutters present along the edge of the pavements. Portland cement concrete gutters drain into catch basins constructed into the gutter line. The gutters are generally in poor condition as some sections of gutter have cracked or settled. The condition and construction of the existing catch basins were not visible during our site visit.

### **EXISTING SUBSURFACE CONDITIONS**

#### **Allard Avenue (Borings A-1 through A-4)**

Native silty clay is present below the pavement section of the borings and extends to the explored depth of 5 feet. The native silty to very stiff clay is stiff in consistency with natural moisture contents ranging from 26 to 33 percent, a liquid limit content of 48 percent, plasticity index of 29 percent, and unconfined compressive strengths ranging from 2,000 to 4,000 to pounds per square foot (psf).

The stratification depths shown on the soil boring logs represent the soil conditions at the boring locations. Variations may occur between borings. Additionally, the stratigraphic lines represent the approximate boundaries between soil types. The transition may be more gradual than what is shown. We have prepared the boring logs on the basis of laboratory classification and testing as well as field logs of the soils encountered.

The Soil Boring Location Plan, Plate No. 1, Soil Boring Logs, Figure Nos. 1 through 11, Atterberg Limits Results, Figure No. 12, and Photographic Documentation, Figure Nos. 13 through 21, are presented in the Appendix. The soil profiles described above are generalized descriptions of the soil conditions at the boring locations. General notes defining the nomenclature used on the boring logs and elsewhere in this report are presented on Figure No. 22.



## **GROUNDWATER CONDITIONS**

No measurable groundwater was observed within the borings during or upon completion of drilling operations. Fluctuations in perched and long-term groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation. It should be noted that groundwater observations made during drilling operations in predominantly cohesive soils are not necessarily indicative of the static groundwater level. This is due to the low permeability of such soils and the tendency of drilling operations to seal off the natural paths of groundwater flow.

## **PAVEMENT EVALUATION AND RECOMMENDATIONS**

### **General**

The existing pavements along Allard Avenue generally consist of 2 to 5 inches of bituminous concrete supported on 6 to 8-1/2 inches of Portland cement concrete. Based on our field operations, it appears the underlying Portland cement concrete contains limestone aggregate between Harper Avenue and Arthur Avenue and slag aggregate between Arthur Avenue and Chester Avenue. The amount of pavement distress is more severe between Arthur Avenue and Chester Avenue, where the slag aggregate Portland cement concrete is generally present. It is common for Portland cement concrete with slab aggregate to experience high severity joint deterioration. Therefore, we recommend the pavement between Arthur and Chester Avenues be reconstructed.

Given the limestone aggregate and pavement distress along Allard Avenue between Harper Avenue and Arthur Avenue, it is more feasible to cold mill the bituminous concrete and construct a new bituminous concrete pavement section supported on the underlying Portland concrete limestone aggregate pavement.

### **Pavement Rehabilitation Preparation Recommendations**

The existing bituminous concrete pavement should be completely removed by cold milling. Prior to the overlay, any broken or deteriorated Portland cement concrete slabs should be removed and replaced as full depth repairs. The extent of full depth repairs required should be evaluated after removal of the existing overlay. In general, we anticipate more conditioning and full depth repairs will be required in the outside lanes where slag coarse aggregate is present based upon historical performance of these aggregates. We recommend any replacement Portland cement concrete slabs be placed at the same thickness as the removed slab. Within any replaced Portland cement concrete slab, we recommend the exposed subgrade soils should be evaluated for stability. We recommend the exposed granular subgrade soils be thoroughly proof compacted and cohesive subgrade soils be proof rolled and evaluated for instability and/or unsuitable soil conditions. Any unstable or unsuitable areas noted should be improved by compaction or removed and replaced with properly compacted engineered fill.

Subgrade undercuts, if required, should be evaluated by a qualified engineering technician to determine if subgrade stabilization is necessary. We recommend that undercut excavations, where required, be backfilled with MDOT 21AA dense-graded material, placed in an engineered manner. Lift thicknesses should not exceed 9 inches. All engineered fill should be compacted to a density of at least 95 percent of the maximum density determined by the Modified Proctor (ASTM D 1557) method of testing. All engineered fill material should be placed and compacted at approximately the optimum moisture content. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

### **Pavement Reconstruction Subgrade Preparation**

The existing pavements and curbs should be removed along the roadway alignments. We anticipate subgrade cuts will be necessary to accommodate the addition of the recommended dense graded aggregate base materials.

The exposed subgrade should be graded to promote effective drainage and then compacted. Once a rough grade has been achieved, the exposed subgrade should be evaluated for stability. We recommend subgrade soils be proof rolled using a fully loaded tri-axle dump truck. We recommend granular subgrade soils be proof compacted with a large smooth drum roller. We recommend the vibratory setting on the smooth drum roller be turned off when within 25 feet of the existing building. We recommend the smooth drum roller make a minimum of 10 passes across the granular subgrade. Any unstable or unsuitable areas noted should be improved by additional compaction or removed and replaced with engineered fill.

Subgrade undercuts, if required, should be evaluated by a qualified engineering technician to determine if subgrade stabilization is necessary. We recommend that undercut excavations, where required, be backfilled with the stockpiled aggregate base material or MDOT 21AA placed in an engineered manner. A drain tile should be placed at the deepest portion of catch undercut and connected to the closest catch basin to prevent trapped water from collecting in the granular cut soils. Lift thicknesses should not exceed 9 inches. All engineered fill should be compacted to a density of at least 95 percent of the maximum density determined by the Modified Proctor (ASTM D 1557) method of testing. All engineered fill material should be placed and compacted at approximately the optimum moisture content. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

### **Lime Stabilization Option**

The existing subgrade soils along Allard Avenue consist of native silty clay with moisture contents ranging from 26 to 33 percent, a liquid limit of 48 percent, and a plasticity index of 29 percent. These values indicate the silty clay subgrade will become unstable under construction traffic. For improved subgrade stabilization, the existing subgrade may be treated with lime. Lime stabilization consists of mixing hydrated lime with silty clay subgrade to decrease the in-situ moisture content and increase the shear strength and effective subgrade reaction value. Typically, the upper 12 to 14 inches of subgrade soil can be mixed with approximately 5 percent lime and compacted in place. The actual lime percentage should be determined by a lime stabilization mix design.

Particular attention should be paid during compaction operations in areas around existing manholes, catch basins, and where curbs and gutters are present. Within these areas, the soils have probably been exposed to greater than normal water infiltration and freeze-thaw heave over the pavement life. It is likely these soils have become unstable and will also need to be removed and replaced with MDOT Class II granular material in accordance with MDOT Type II undercutting procedures.

Engineered fill, if required, may consist of imported sand meeting the gradation requirements of MDOT Class II structural fill. All engineered fill should be compacted to a density of at least 95 percent of the maximum density obtainable by the Modified Proctor (ASTM D 1557) method of testing.

### **Pavement Design**

We performed pavement design analyses in accordance with the "AASHTO Guide for Design of Pavement Structures". Based on the presence of the silty clay subgrade soils, we have provided design pavement sections based on an effective modulus of subgrade reaction,  $k$ , of 50 pounds per cubic inch (pci) and an effective subgrade resilient modulus of 4,000 pounds per square inch (psi).

No information regarding the type or amount of traffic along Allard Avenue was available upon completion of this report. In addition, the City of Grosse Pointe Woods does not have a minimum design pavement section for local side streets. However, we assume traffic along the roadways is primarily cars with the occasional garbage and delivery truck. For evaluation purposes, we have designed the pavement section on an estimated of 100,000 18-kip equivalent single-axle loads (ESALs) over a 20-year design life for the proposed bituminous concrete pavement section and 500,000 ESAL's over a 20-year design life for the proposed Portland cement concrete pavement section. If any actual traffic volume



information becomes available, G2 Consulting Group should be notified so we can reevaluate our recommendations.

For the proposed new pavement section, we estimated a serviceability loss of 2.0, a standard deviation of 0.49 for flexible pavements and 0.39 for rigid pavements, a reliability factor of 0.95. load transfer coefficient of 3.2, a drainage coefficient of 1.0, a Portland cement concrete modulus of rupture of 670 psi, and an elastic modulus of the Portland cement concrete slab of 4,200,000 psi.

We recommend the proposed bituminous concrete overlay option generally match the existing bituminous concrete thickness, or generally 3-1/2 inches thick. Based on the anticipated traffic volumes, we recommend the overlay consist of 1-1/2 inches of MDOT 5E3 bituminous concrete wearing course and 2 inches of MDOT 4E3 bituminous concrete leveling course, supported on the underlying Portland cement concrete pavement. However, the thickness of the overlay may vary to achieve proper pavement drainage. The lift thickness limits of MDOT 5E3 bituminous concrete range from 1-1/2 to 2 inches as the lift thickness limits of MDOT 4E3 bituminous concrete range from 2 to 2-1/2 inches. Therefore, where more than 4-1/2 inches of bituminous concrete pavement is required, we recommend additional MDOT 4E3 wedge course bituminous concrete be placed as necessary to achieve final grades.

Based on the results of our analyses, we recommend a minimum bituminous concrete pavement section for the pavement reconstruction consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 10 inches of MDOT 21AA dense graded material aggregate base. If the subgrade is treated with lime, we recommend a minimum pavement section for the pavement reconstruction consisting of 2 inches of MDOT 5E1 bituminous concrete wearing course supported by 2 inches of MDOT 4E1 bituminous concrete leveling course supported by 6 inches of MDOT 21AA dense graded material aggregate base.

Based on the results of our analyses, we recommend the proposed Portland cement concrete pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 6 inches of MDOT 21AA dense graded aggregate base course, supported on a lime treated subgrade. Where lime stabilization is not utilized, we recommend the proposed pavement reconstruction pavement section consist of 7 inches of non-reinforced MDOT P1M concrete atop 8 inches of MDOT 21AA dense graded aggregate base course.

Binder grade PG 64-22 is suitable for use with the HMA mixtures. Top course mixtures should be limited to Tier 1 RAP addition requirements as noted in MDOT Special Provision 12SP501(E) to reduce early reflective cracking. MDOT P1 grade Portland cement concrete is suitable for new pavement slabs, curbs, and gutter. It is recommended that P1 grade concrete mixtures contain at least 25 percent GGBFS substitution for Portland cement or use low alkali (0.6% or less total cement alkali) Type I or Type II cement.

All pavement materials are specified within the 2012 Standard Specifications for Construction from the Michigan Department of Transportation. The bituminous pavement materials are described in Section 501 and can be assigned a structural coefficient number of 0.42. Any imported MDOT 21AA material can be assigned a structural coefficient number of 0.14.

### **Pavement Drainage and Maintenance**

The pavement should be properly sloped to promote effective surface and subsurface drainage and prevent water from ponding. We also recommend pavement subbase materials consist of non-frost-susceptible aggregates where possible. Regular timely maintenance should be performed on the pavement to reduce the potential deterioration associated with moisture infiltration through surface cracks and pavement joints. The owner should be prepared to seal the cracks with a hot-applied elastic crack filler as soon as possible after cracking develops and as often as necessary to block the passage of water to the subgrade soils.



## GENERAL COMMENTS

We have formulated the evaluations and recommendations presented in this report relative to site preparation and pavement improvements on the basis of data provided to us relating to the location, type, and grade for the proposed site. Any significant change in this data should be brought to our attention for review and evaluation with respect to the prevailing subsurface conditions.

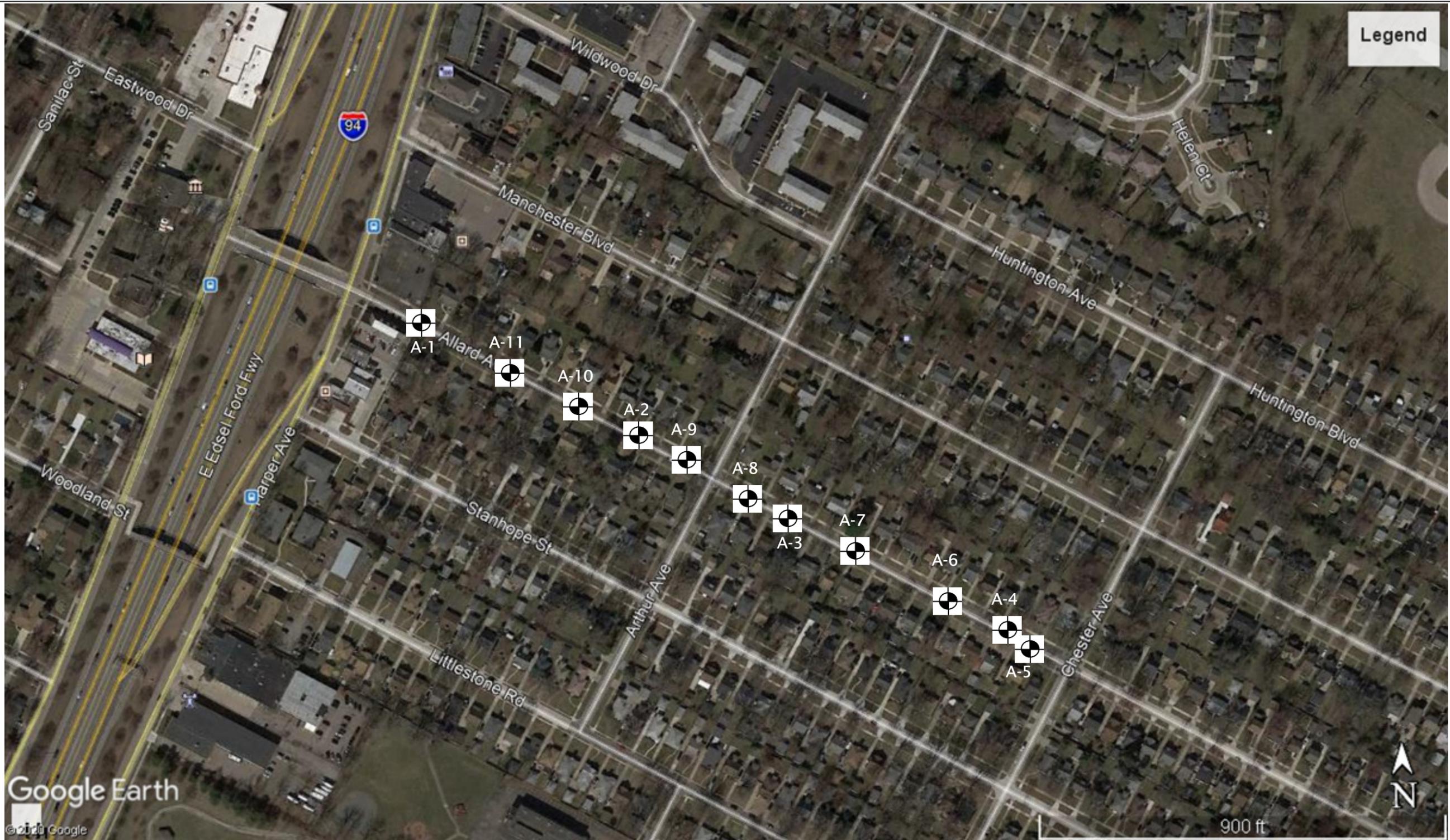
The scope of the present investigation was limited to evaluation of subsurface conditions for the construction of the proposed pavement improvements and other related aspects of the proposed project. No chemical, environmental, or hydrogeological testing or analysis were included in the scope of this investigation. If changes occur in the design, location, or concept of the project, the conclusions and recommendations contained in this report are not valid unless G2 Consulting Group, LLC reviews the changes. G2 Consulting Group, LLC will then confirm the recommendations presented herein or make changes in writing.

We have based the analyses and recommendations submitted in this report upon the data from soil borings performed at the approximate locations shown on the Soil Boring Location Plan, Plate No. 1. This report does not reflect variations that may occur between the actual boring locations. The nature and extent of any such variations may not become clear until the time of construction. If significant variations then become evident, it may be necessary for us to re-evaluate our report recommendations.

Soil conditions at the site could vary from those generalized on the basis of soil borings made at specific locations. It is, therefore, recommended that G2 Consulting Group, LLC be retained to provide soil engineering services during the water main and roadway construction phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations. Also, this allows design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.

## APPENDIX

Soil Boring Location Plan	Plate No. 1
Soil Boring Logs	Figure Nos. 1 through 11
Atterberg Limit Results	Figure No. 12
Photographic Documentation	Figure Nos. 13 through 21
General Notes Terminology	Figure No. 22



Legend



**Legend**

-  Pavement Core/Hand Auger Soil Borings performed by G2 Consulting Group, LLC on November 20, 2020
-  Supplemental Pavement Cores (A-5 through A-11) performed by G2 Consulting Group, LLC on January 13, 2020

<b>Soil Boring Location Plan</b>		
Grosse Pointe Woods 2021 Streets Program Allard Avenue: Harper to Chester Grosse Pointe Woods, Michigan		
 <b>CONSULTING GROUP</b>	Project No. 200937	
	Drawn by: JMH	
	Date: 1/12/21	Plate No. 1
	Scale: NTS	

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-1

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.432548° Longitude: -82.921233°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3					
		Portland Cement Concrete (8-1/2 inches)	1.0					
		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	10	30.6		3000*
5			5.0	AS-2	13	25.8		4000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2352 Allard Avenue, 8' N of CL  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 1

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-2

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.432068° Longitude: -82.920177°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (5 inches)	0.4					
		Portland Cement Concrete (8-1/2 inches)	0.8					
		Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	10	30.1		3000*
5			5.0	AS-2	10	26.9		3000*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2278 Allard Avenue, 8' S of CL  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 2

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-3

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.431468° Longitude: -82.918593°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (2 inches)	0.2					
		Portland Cement Concrete (7-1/4 inches)	0.8					
		Stiff Brown and Gray Silty Clay with trace sand and gravel		AS-1	7	31.4		2000*
5			5.0	AS-2	8	29.0		2500*
		End of Boring @ 5 ft						
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2294 Allard Avenue, 8' N of CL  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

Figure No. 3

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-4

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



G2 Project No. 200937

Latitude: 42.430975° Longitude: -82.917389°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (7 inches)						
		Natural Aggregate Base: Brown Sandy Gravel with trace silt (2 inches)	0.6 0.8					
		Stiff Brown and Gray Silty Clay with trace silt and gravel		AS-1	7	33.4		2000*
5		End of Boring @ 5 ft	5.0	AS-2	10	27.0		3000*
10			10					

Total Depth: 5 ft  
 Drilling Date: November 20, 2020  
 Inspector: E. Talabo  
 Contractor: G2 Consulting Group, LLC  
 Driller: A. Thomas

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2112 Allard Avenue, 8' N of CL  
 \* Calibrated Hand Penetrometer

Drilling Method:  
 4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Excavation Backfilling Procedure:  
 Auger cuttings and capped with cold patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 4

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-5

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.430947° Longitude: -82.917407°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches)	0.3					
		Portland Cement Concrete (6-1/4 inches)	0.8					
		End of Boring @ 0.8 ft						
5			5					
10			10					

Total Depth: 0.8 ft  
 Drilling Date: January 13, 2021  
 Inspector: DJ Radich, P.E.  
 Contractor: G2 Consulting Group, LLC  
 Driller: J. Wilberding

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2112 Allard Avenue, 8' S of CL

Drilling Method:  
 4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
 Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 5

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-6

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.431129° Longitude: -82.917750°

SUBSURFACE PROFILE

SOIL SAMPLE DATA

DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3					
		Portland Cement Concrete (7-1/4 inches)	0.9					
		End of Boring @ 0.9 ft						
5			5					
10			10					

Total Depth: 0.9 ft  
Drilling Date: January 13, 2021  
Inspector: DJ Radich, P.E.  
Contractor: G2 Consulting Group, LLC  
Driller: J. Wilberding

Water Level Observation:  
Dry during and upon completion

Notes:  
2139 Allard Avenue, 8' N of CL

Drilling Method:  
4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 6

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-7

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.431310° Longitude: -82.918307°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/4 inches)	0.3					
		Portland Cement Concrete (6-1/4 inches)	0.8					
		End of Boring @ 0.8 ft						
5			5					
10			10					

Total Depth: 0.8 ft  
 Drilling Date: January 13, 2021  
 Inspector: DJ Radich, P.E.  
 Contractor: G2 Consulting Group, LLC  
 Driller: J. Wilberding

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2160 Allard Avenue, 8' S of CL

Drilling Method:  
 4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
 Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 7

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-8

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.431639° Longitude: -82.919053°

SUBSURFACE PROFILE

SOIL SAMPLE DATA

DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3					
		Portland Cement Concrete (6 inches)	0.8					
		End of Boring @ 0.8 ft						
5			5					
10			10					

Total Depth: 0.8 ft  
Drilling Date: January 13, 2021  
Inspector: DJ Radich, P.E.  
Contractor: G2 Consulting Group, LLC  
Driller: J. Wilberding

Water Level Observation:  
Dry during and upon completion

Notes:  
2220 Allard Avenue, 8' N of CL

Drilling Method:  
4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Figure No. 8

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-9

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.431886° Longitude: -82.919720°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-3/4 inches)	0.3					
		Portland Cement Concrete (6-1/4 inches)	0.8					
		End of Boring @ 0.8 ft						
5			5					
10			10					

Total Depth: 0.8 ft  
 Drilling Date: January 13, 2021  
 Inspector: DJ Radich, P.E.  
 Contractor: G2 Consulting Group, LLC  
 Driller: J. Wilberding

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2254 Allard Avenue, 8' S of CL

Drilling Method:  
 4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
 Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-10

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.432126° Longitude: -82.920201°

SUBSURFACE PROFILE

SOIL SAMPLE DATA

DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/4 inches)	0.3					
		Portland Cement Concrete (7-1/2 inches)	0.9					
		End of Boring @ 0.9 ft						
5			5					
10			10					

Total Depth: 0.9 ft  
Drilling Date: January 13, 2021  
Inspector: DJ Radich, P.E.  
Contractor: G2 Consulting Group, LLC  
Driller: J. Wilberding

Water Level Observation:  
Dry during and upon completion

Notes:  
2289 Allard Avenue, 8' N of CL

Drilling Method:  
4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21

Project Name: 2021 Grosse Pointe Woods Streets Program

Soil Boring No. A-11

Project Location: Allard Avenue, Christine Court, Hampton Road, and Roslyn Road  
Grosse Pointe Woods, Michigan



CONSULTING GROUP

G2 Project No. 200937

Latitude: 42.432354° Longitude: -82.920870°

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4 inches)	0.3					
		Portland Cement Concrete (6-3/4 inches)	0.9					
		End of Boring @ 0.9 ft						
5			5					
10			10					

Total Depth: 0.9 ft  
 Drilling Date: January 13, 2021  
 Inspector: DJ Radich, P.E.  
 Contractor: G2 Consulting Group, LLC  
 Driller: J. Wilberding

Water Level Observation:  
 Dry during and upon completion

Notes:  
 2320 Allard Avenue, 8' S of CL

Drilling Method:  
 4-inch diameter diamond tipped core barrel

Excavation Backfilling Procedure:  
 Cold Patch

PAVEMENT CORE DCP 200937.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/25/21



**Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 1: Low to moderate severity transverse and longitudinal cracking with cold patching near boring A-1. View to the west.



Photograph No. 2: Low to moderate severity transverse and longitudinal cracking with crack sealing near boring A-2. View to the west.

**Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937**



Photograph No. 3: Low to moderate severity transverse and longitudinal cracking with cold patching and full depth replacement patching near boring A-3. View to the west.



Photograph No. 4: Moderate severity transverse and longitudinal cracking with cold patching and full depth replacement patching near boring A-4. View to the west.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 5: Moderate to high severity transverse and longitudinal cracking with cold patching and full depth replacement patching near boring A-5. View to the west. Note the underlying Portland cement concrete contains slag aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 6: Moderate severity transverse and longitudinal reflective cracking and edge cracking with cold patching and crack sealing near boring A-6. View to the west. Note the underlying Portland cement concrete contains slag aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 7: Moderate to high severity transverse and longitudinal reflective cracking and edge cracking with cold patching near boring A-7. View to the east. Note the underlying Portland cement concrete contains slag aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 8: Moderate severity transverse and longitudinal reflective cracking and edge cracking with crack sealing near boring A-8. View to the northeast. Note the underlying Portland cement concrete contains limestone aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 9: Moderate severity transverse and longitudinal reflective cracking and edge cracking with crack sealing near boring A-9. View to the west. Note the underlying Portland cement concrete contains limestone aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 10: Moderate severity transverse and longitudinal reflective cracking with cold patching near boring A-10. View to the west. Note the underlying Portland cement concrete contains limestone aggregate.

Photographic Documentation  
2021 Streets Program - Allard Avenue  
Grosse Pointe Woods, Michigan  
G2 Project No. 200937



Photograph No. 11: Low to moderate severity transverse and longitudinal reflective cracking with cold patching near boring A-11. View to the west. Note the underlying Portland cement concrete contains limestone aggregate.

## GENERAL NOTES TERMINOLOGY

Unless otherwise noted, all terms herein refer to the Standard Definitions presented in ASTM 653.

### PARTICLE SIZE

Boulders	- greater than 12 inches
Cobbles	- 3 inches to 12 inches
Gravel - Coarse	- 3/4 inches to 3 inches
- Fine	- No. 4 to 3/4 inches
Sand - Coarse	- No. 10 to No. 4
- Medium	- No. 40 to No. 10
- Fine	- No. 200 to No. 40
Silt	- 0.005mm to 0.074mm
Clay	- Less than 0.005mm

### CLASSIFICATION

The major soil constituent is the principal noun, i.e. clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituent (percent by weight)
Trace - 1 to 12%	Trace - 1 to 12%
Adjective - 12 to 35%	Little - 12 to 23%
And - over 35%	Some - 23 to 33%

### COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier, i.e. sandy clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils, i.e. silty clay, trace sand, little gravel.

Consistency	Unconfined Compressive Strength (psf)	Approximate Range of (N)
Very Soft	Below 500	0 - 2
Soft	500 - 1,000	3 - 4
Medium	1,000 - 2,000	5 - 8
Stiff	2,000 - 4,000	9 - 15
Very Stiff	4,000 - 8,000	16 - 30
Hard	8,000 - 16,000	31 - 50
Very Hard	Over 16,000	Over 50

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

### COHESIONLESS SOILS

Density Classification	Relative Density %	Approximate Range of (N)
Very Loose	0 - 15	0 - 4
Loose	16 - 35	5 - 10
Medium Compact	36 - 65	11 - 30
Compact	66 - 85	31 - 50
Very Compact	86 - 100	Over 50

Relative Density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.

### SAMPLE DESIGNATIONS

- AS - Auger Sample - Cuttings directly from auger flight
- BS - Bottle or Bag Samples
- S - Split Spoon Sample - ASTM D 1586
- LS - Liner Sample with liner insert 3 inches in length
- ST - Shelby Tube sample - 3 inch diameter unless otherwise noted
- PS - Piston Sample - 3 inch diameter unless otherwise noted
- RC - Rock Core - NX core unless otherwise noted

STANDARD PENETRATION TEST (ASTM D 1586) - A 2.0 inch outside-diameter, 1-3/8 inch inside-diameter split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).