

CONTRACT DOCUMENTS
FOR
FIVE MILE ROAD AND RIDGE ROAD
RECONSTRUCTION PHASE 1

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER
REDEVELOPMENT AUTHORITY (MITCRA)

IN COLLABORATION WITH
CHARTER TOWNSHIP OF NORTHVILLE, MI
AND
CHARTER TOWNSHIP OF PLYMOUTH, MI

OHM ADVISORS
34000 Plymouth Road
Livonia, MI 48150
0657-21-0010

December 22, 2023

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5 Mile Road Corridor Design Project Napier Road to Beck Road – January 4, 2016

5 Mile Corridor Project Ridge Road: 5 Mile Road to Halyard Road – September 26, 2022

ADVERTISEMENT FOR BIDS

FIVE MILE ROAD AND RIDGE ROAD RECONSTRUCTION PHASE 1
Michigan International Technology Center Redevelopment Authority (MITCRA)
December 22, 2023

Sealed Bids for the Five Mile Road and Ridge Road Reconstruction will be received by the Michigan International Technology Center Redevelopment Authority (MITCRA) at the office of the Northville Township Clerk at 44405 Six Mile Road, Northville, MI 48168, until 2:00 PM local time on January 30, 2024, at which time the Bids received will be publicly opened and read.

The project consists of concrete and asphalt road reconstruction, curb and gutter placement, aggregate shoulder placement, underdrain installation, bioswale installation, ditch reconstruction, signing, striping, and restoration. The project is located along Five Mile Road from approximately 500 feet west of Ridge Road eastward to a location approximately 500 feet west of N Beck Road, and along Ridge Road from approximately 250 feet north of Five Mile Road to Halyard Drive.

The Issuing Office for the Bidding Documents is the office of the Engineer, Orchard, Hiltz, & McCliment, Inc. (d.b.a. OHM Advisors), 34000 Plymouth Road, Livonia, MI 48150.

Bidding Documents may be examined at the following locations beginning on December 22, 2023:

OHM Advisors; Online Plan Room
Dodge Data & Analytics; dodgeproducts.construction.com
CMD Group; cmdgroup.com
Construction Association of Michigan (CAM); buildwithcam.com

Bidding Documents were prepared by OHM Advisors. Bidders should direct correspondence to that office (734)-466-4441 (attn: Mark Loch). Digital plans may be downloaded from the OHM Plan Room: https://gap.questcdn.com/gap/projects/prj_browse/ipp_browse_grid.html?projType=all&provider=2581600&group=2581600

By request only, hard copies of Bidding Documents may be obtained after December 27, 2023 at 12:00 pm, local time, by contacting the office of the Engineer, Orchard, Hiltz, & McCliment, Inc., 34000 Plymouth Road, Livonia, MI 48150. A non-refundable deposit may be required for each set of Bidding Documents. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office. Bidders should direct correspondence to the Project Manager (734) 466-4441 or mark.loch@ohm-advisors.com (attn: Mark Loch).

Bid security shall be furnished in accordance with the Instructions to Bidders. Bid security in the form of a Bid Bond for a sum no less than 5% of the amount of the Bid will be required with each Bid. Bids shall be enclosed in sealed envelopes plainly marked with the project name and the name of the bidder.

No bid may be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receipt of the Bids. This time period may be extended by mutual agreement of the Owner and any Bidder or Bidders. The Owner reserves the right to accept any or all Bids and award the contract to other than the lowest bidder, to waive any irregularities or informalities or both; to reject any or all Bids; and in general to make the award of the Contract in any manner deemed by the Owner, in its sole discretion, to be in the best interest of the Owner.

Cynthia Jankowski, Township Clerk
Charter Township of Northville

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.1 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

2.1 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.

2.2 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.

2.3 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

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

A. Evidence of Bidder's authority to do business in the state where the Project is located.

B. Bidder's state or other contractor license number, if applicable.

C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."

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

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

3.4 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

4.1 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.

4.2 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; and
 - 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.

4.3 Site Visit and Testing by Bidders

- A. Bidder shall conduct any 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 operation, 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.

4.4 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.

4.5 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

5.1 It is the responsibility of each Bidder before submitting 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 Works 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

- 6.1 A pre-bid conference is not required for this project.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

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

ARTICLE 8 – BID SECURITY

- 8.1 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid Bond (on the form included in the Bidding Documents) issued by a surety meeting in the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 8.2 The Bid Security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

- 8.3 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.4 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

- 9.1 The number of days within which, or the dates by which, Milestones 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

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

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.1 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.
- 11.2 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 the post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.1 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.
- 12.2 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.
- 12.3 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:
- a. Paving subcontractor

- b. Flatwork subcontractor
- c. Underground subcontractor
- d. Pavement marking subcontractor

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

- 12.4 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

- 13.1 The Bid Form is included with the Bidding Documents.
- A. All blanks in 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, the Bidder may enter the words "No Bid" or "Not Applicable."
- 13.2 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.
- 13.3 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.
- 13.4 A Bid by an individual shall show the Bidder's name and official address.
- 13.5 A Bid by a joint venture shall be executed by an authorized representative of each joint venture in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.6 All names shall be printed in ink below the signatures.
- 13.7 The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

- 13.8 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.9 The Bid shall contain evidence of Bidder's authority and qualifications 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

14.1 Unit Price

- A. Bidders shall submit a Bid on a unit price basis as set forth in 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

- 15.1 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.
- 15.2 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 Clerk's Office, Charter Township of Northville.
- 15.3 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

- 16.1 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.

- 16.2 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.
- 16.3 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.1 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 alternatives, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.1 All Bids will remain subject to acceptance for the period of the 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 – EVALUTION OF BIDS AND AWARD OF CONTRACT

- 19.1 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.
- 19.2 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.
- 19.3 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.
- 19.4 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

- 20.1 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

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

END OF SECTION 00 21 13

BID FORM
Five Mile Road and Ridge Road Reconstruction Phase 1
0657-21-0010

ARTICLE 1 – BID RECIPIENT

1.1 This Bid is submitted to:

MITCRA, courtesy of Charter Township of Northville Clerk's Office, 44405 Six Mile Road, Northville, MI 48168

1.2 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

2.1 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 90 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

3.1 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>
1	1/24/2024
2	1/25/2024

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

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

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

have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

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

ARTICLE 4 – BIDDER'S CERTIFICATION

4.1 Bidder certifies that:

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

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.1 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Item	Description	Estimated Quantity		Unit Price	Amount
1	_Railroad Inspection and Flagging, CSX Railroad	50,000	Dir	\$ 1.00	\$ 50,000.00
2	_Reimbursed Permit Fees	50,000	Dir	\$ 1.00	\$ 50,000.00
3	Mobilization, Max	1	LSUM	\$ 1,075,000.00	\$ 1,075,000.00
4	_Clearing, Modified	2.2	Acre	\$ 4,400.00	\$ 9,680.00
5	Tree, Rem, 19 inch to 36 inch	25	Ea	\$ 900.00	\$ 22,500.00
6	Tree, Rem, 37 inch or Larger	12	Ea	\$ 2,000.00	\$ 24,000.00
7	Tree, Rem, 6 inch to 18 inch	42	Ea	\$ 250.00	\$ 10,500.00
8	Culv, Rem, Less than 24 inch	22	Ea	\$ 800.00	\$ 17,600.00
9	Culv, End, Rem, Less than 24 inch	1	Ea	\$ 675.00	\$ 675.00
10	Dr Structure, Rem	17	Ea	\$ 500.00	\$ 8,500.00
11	Sewer, Rem, Less than 24 inch	724	Ft	\$ 22.00	\$ 15,928.00
12	Curb and Gutter, Rem	2,379	Ft	\$ 6.50	\$ 15,463.50
13	Fence, Rem	730	Ft	\$ 8.50	\$ 6,205.00
14	Guardrail, Rem	678	Ft	\$ 4.00	\$ 2,712.00
15	Masonry and Conc Structure, Rem	5	Cyd	\$ 90.00	\$ 450.00
16	Pavt, Rem	23,488	Syd	\$ 7.00	\$ 164,416.00
17	Sidewalk, Rem	44	Syd	\$ 10.00	\$ 440.00
18	_Culvert Cleanout	450	Ft	\$ 8.00	\$ 3,600.00
19	_Removing Abandoned Gas Main	800	Ft	\$ 15.00	\$ 12,000.00

20	_Removing Abandoned Water Main	1,862	Ft	\$	18.00	\$	33,516.00
21	_Misc Obstruction, Rem	50	Cyd	\$	40.00	\$	2,000.00
22	_Exploratory Excavation	20	Ea	\$	450.00	\$	9,000.00
23	Excavation, Earth	30,500	Cyd	\$	17.00	\$	518,500.00
24	Non Haz Contaminated Material Handling and Disposal, LM	300	Cyd	\$	60.00	\$	18,000.00
25	_Ditch Cleanout, Modified	5	Sta	\$	1,165.00	\$	5,825.00
26	_Embankment, CIP, Modified	15,879	Cyd	\$	10.00	\$	158,790.00
27	_Subgrade Undercutting, Type II, Special	500	Cyd	\$	70.00	\$	35,000.00
28	_Subgrade Undercutting, Type IV, Modified	4,000	Cyd	\$	55.00	\$	220,000.00
29	_Grading for Detour Route	4	Ea	\$	1,600.00	\$	6,400.00
30	_Stage Construction Earthwork	1	LSUM	\$	222,000.00	\$	222,000.00
31	Erosion Control, Check Dam, Stone	2,362	Ft	\$	27.00	\$	63,774.00
32	Erosion Control, Inlet Protection, Fabric Drop	35	Ea	\$	105.00	\$	3,675.00
33	Erosion Control, Maintenance, Sediment Rem	20	Cyd	\$	57.00	\$	1,140.00
34	Erosion Control, Sediment Trap	6	Ea	\$	154.00	\$	924.00
35	Erosion Control, Silt Fence	10,167	Ft	\$	2.05	\$	20,842.35
36	_Erosion Control, Stone Filter at Structure	10	Ea	\$	180.00	\$	1,800.00
37	_Aggregate Base, 12 inch, Modified	35,783	Syd	\$	19.00	\$	679,877.00
38	_Aggregate Base, 6 inch, Modified	890	Syd	\$	15.00	\$	13,350.00
39	_Aggregate Base, 9 inch, Modified	21,975	Syd	\$	15.00	\$	329,625.00
40	Maintenance Aggregate, 21AA	50	Ton	\$	43.00	\$	2,150.00
41	_Aggregate Surface Cse, Modified	50	Ton	\$	40.00	\$	2,000.00
42	_Shld, CI I, 10 inch, Modified	5,076	Syd	\$	20.00	\$	101,520.00
43	Road Grade Biaxial Geogrid	1,000	Syd	\$	3.00	\$	3,000.00
44	Culv End Sect, 12 inch	2	Ea	\$	700.00	\$	1,400.00
45	Culv End Sect, Conc, 12 inch	2	Ea	\$	700.00	\$	1,400.00

46	Culv End Sect, Conc, 18 inch	4	Ea	\$	790.00	\$	3,160.00
47	Culv End Sect, Conc, 24 inch	3	Ea	\$	1,005.00	\$	3,015.00
48	Culv, CI A, 12 inch	204	Ft	\$	53.00	\$	10,812.00
49	Sewer, CI E, 12 inch, Tr Det B	1,145	Ft	\$	85.00	\$	97,325.00
50	Sewer, CI E, 18 inch, Tr Det B	253	Ft	\$	61.00	\$	15,433.00
51	Sewer, CI E, 24 inch, Tr Det B	237	Ft	\$	108.00	\$	25,596.00
52	Sewer Tap, 12 inch	1	Ea	\$	355.00	\$	355.00
53	Sewer, Reinf Conc Ellip, HE CI A, 19 inch by 30 inch, Tr Det B	56	Ft	\$	141.00	\$	7,896.00
54	_Sewer, CI E, 12 inch, Tr Det A	1,706	Ft	\$	52.00	\$	88,712.00
55	_Sewer, CI E, 24 inch, Tr Det A	896	Ft	\$	71.00	\$	63,616.00
56	Dr Structure, Tap, 6 inch	8	Ea	\$	145.00	\$	1,160.00
57	Dr Structure, Tap, 12 inch	2	Ea	\$	431.31	\$	862.62
58	_Dr Structure Reconstruct	39	Ft	\$	200.00	\$	7,800.00
59	_Catch Basin A, Cover S	25	Ea	\$	3,000.00	\$	75,000.00
60	_Dr Structure Cover, Adj	9	Ea	\$	400.00	\$	3,600.00
61	_Inlet A, Cover S	1	Ea	\$	2,050.00	\$	2,050.00
62	_Mh A, 48 inch dia, Cover A	5	Ea	\$	3,400.00	\$	17,000.00
63	_Mh A, 48 inch dia, Cover C	9	Ea	\$	3,035.00	\$	27,315.00
64	_Mh A, 48 inch dia, Cover S	2	Ea	\$	3,045.00	\$	6,090.00
65	_Mh_A_60 inch dia, Cover S	1	Ea	\$	4,500.00	\$	4,500.00
66	_Mh_A_60 inch dia, Cover C	1	Ea	\$	4,500.00	\$	4,500.00
67	_San Structure Cover, Adj	9	Ea	\$	700.00	\$	6,300.00
68	_Storm Water Pollution Control Unit, 12.1 cfs	1	Ea	\$	35,000.00	\$	35,000.00
69	_Storm Water Pollution Control Unit, 8.6 cfs	1	Ea	\$	35,000.00	\$	35,000.00
70	_Storm Water Pollution Control, Unit, 9.6 cfs	1	Ea	\$	54,000.00	\$	54,000.00
71	Underdrain Outlet, 6 inch	354	Ft	\$	18.00	\$	6,372.00

72	Underdrain, Outlet Ending, 6 inch	15	Ea	\$	215.00	\$	3,225.00
73	_Underdrain, Subgrade, 6 inch, Modified	5,685	Ft	\$	15.00	\$	85,275.00
74	_Underdrain, Subgrade, Shallow, 6 inch	9,674	Ft	\$	12.00	\$	116,088.00
75	HMA Surface, Rem	38,283	Syd	\$	5.00	\$	191,415.00
76	Pavt for Butt Joints, Rem	232	Syd	\$	28.30	\$	6,565.60
77	HMA, 4EL	162	Ton	\$	158.00	\$	25,596.00
78	HMA, 5EL	71	Ton	\$	217.00	\$	15,407.00
79	_Temp HMA Surface, 3.5 inch	113,599	Sft	\$	3.40	\$	386,236.60
80	_Bit Mixture for Patching, Temp	200	Ton	\$	200.00	\$	40,000.00
81	_Misc HMA Approach	241	Ton	\$	173.00	\$	41,693.00
82	_Misc HMA, 3EMH	69	Ton	\$	178.00	\$	12,282.00
83	_Misc HMA, 4EMH	15	Ton	\$	247.00	\$	3,705.00
84	_Misc HMA, 5EMH	15	Ton	\$	251.00	\$	3,765.00
85	Joint, Contraction, Cp	32,287	Ft	\$	15.00	\$	484,305.00
86	Joint, Expansion, E2	833	Ft	\$	28.00	\$	23,324.00
87	Joint, Plane-of-Weakness, W	746	Ft	\$	3.30	\$	2,461.80
88	_Cold Weather Protection, Conc Pavt	15,937	Syd	\$	0.01	\$	159.37
89	_Conc Pavt, Misc, Nonreinf, 10 inch, Modified	2,633	Syd	\$	78.00	\$	205,374.00
90	_Conc Pavt, Misc, Nonreinf, ISC-3, 10 inch	3,212	Syd	\$	79.00	\$	253,748.00
91	_Conc Pavt, Nonreinf, 10 inch, Modified	28,471	Syd	\$	53.26	\$	1,516,365.46
92	_Conc Pavt, Nonreinf, ISC-3, 10 inch	9,599	Syd	\$	55.00	\$	527,945.00
93	Joint, Contraction, Crg	151	Ft	\$	24.00	\$	3,624.00
94	Lane Tie, Epoxy Anchored	518	Ea	\$	11.50	\$	5,957.00
95	Driveway, Nonreinf Conc, 8 inch	434	Syd	\$	69.00	\$	29,946.00
96	Curb and Gutter, Conc, Det F1	316	Ft	\$	49.00	\$	15,484.00
97	Driveway Opening, Conc, Det M	242	Ft	\$	49.00	\$	11,858.00

98	_Spillway, Conc, Modified	86	Ft	\$	139.00	\$	11,954.00
99	Detectable Warning Surface	40	Ft	\$	65.00	\$	2,600.00
100	Curb Ramp Opening, Conc	44	Ft	\$	15.50	\$	682.00
101	Curb Ramp, Conc, 4 inch	404	Sft	\$	18.00	\$	7,272.00
102	Guardrail Approach Terminal, Type 2M	4	Ea	\$	3,700.00	\$	14,800.00
103	Guardrail Reflector	88	Ea	\$	7.00	\$	616.00
104	Guardrail, Type MGS-8D, 72 inch Post	2,025	Ft	\$	32.00	\$	64,800.00
105	_Field Office	18	Mo	\$	2,500.00	\$	45,000.00
106	Sign, Type II, Rem	1	Ea	\$	10.00	\$	10.00
107	Sign, Type III, Rem	68	Ea	\$	10.00	\$	680.00
108	Sign, Type V, Rem	3	Ea	\$	10.00	\$	30.00
109	Ground Mtd Sign Support, Rem	58	Ea	\$	10.00	\$	580.00
110	Sign, Type B, Perm	358	Sft	\$	41.00	\$	14,678.00
111	Pavt Mrkg, Ovly Cold Plastic, 12 inch, Cross Hatching, Yellow	254	Ft	\$	6.50	\$	1,651.00
112	Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	185	Ft	\$	15.95	\$	2,950.75
113	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym	6	Ea	\$	225.00	\$	1,350.00
114	Pavt Mrkg, Ovly Cold Plastic, Railroad Sym	2	Ea	\$	375.00	\$	750.00
115	Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym	2	Ea	\$	225.00	\$	450.00
116	Pavt Mrkg, Sprayable Thermopl, 6 inch, White	11,695	Ft	\$	0.48	\$	5,613.60
117	Pavt Mrkg, Sprayable Thermopl, 6 inch, Yellow	21,256	Ft	\$	0.48	\$	10,202.88
118	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	25	Ea	\$	65.00	\$	1,625.00
119	Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	25	Ea	\$	0.01	\$	0.25
120	Lighted Arrow, Type C, Furn	2	Ea	\$	500.00	\$	1,000.00

121	Lighted Arrow, Type C, Oper	2	Ea	\$	0.01	\$	0.02
122	Minor Traf Devices	1	LSUM	\$	1,000,000.00	\$	1,000,000.00
123	Pavt Mrkg, Longit, 6 inch or Less Width, Rem	9,915	Ft	\$	0.65	\$	6,444.75
124	Pavt Mrkg, Longit, Greater than 6 inch Width, Rem	158	Ft	\$	0.85	\$	134.30
125	Pavt Mrkg, Type NR, Paint, 24 inch, Stop Bar	35	Ft	\$	6.00	\$	210.00
126	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, White, Temp	31,635	Ft	\$	0.49	\$	15,501.15
127	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, Yellow, Temp	31,787	Ft	\$	0.49	\$	15,575.63
128	Plastic Drum, Fluorescent, Furn	600	Ea	\$	20.00	\$	12,000.00
129	Plastic Drum, Fluorescent, Oper	600	Ea	\$	0.01	\$	6.00
130	Sign Cover	5	Ea	\$	50.00	\$	250.00
131	Sign, Portable, Changeable Message, Furn	4	Ea	\$	3,000.00	\$	12,000.00
132	Sign, Portable, Changeable Message, Oper	4	Ea	\$	1.00	\$	4.00
133	Sign, Type A, Temp, Prismatic, Furn	66	Sft	\$	7.00	\$	462.00
134	Sign, Type A, Temp, Prismatic, Oper	66	Sft	\$	0.01	\$	0.66
135	Sign, Type B, Temp, Prismatic, Furn	1,590	Sft	\$	5.00	\$	7,950.00
136	Sign, Type B, Temp, Prismatic, Oper	1,590	Sft	\$	0.01	\$	15.90
137	Sign, Type B, Temp, Prismatic, Spec, Furn	235	Sft	\$	8.00	\$	1,880.00
138	Sign, Type B, Temp, Prismatic, Spec, Oper	235	Sft	\$	0.01	\$	2.35
139	Traf Regulator Control	1	LSUM	\$	350,000.00	\$	350,000.00
140	_Misc Pavt Mrkg, Type R, Paint, 24 inch, White, Stop Bar, Temp	33	Ft	\$	15.00	\$	495.00
141	_Misc Pavt Mrkg, Type R, Paint, 4 inch, White, Temp	18,247	Ft	\$	2.10	\$	38,318.70
142	_Misc Pavt Mrkg, Type R, Paint, 4 inch, Yellow, Temp	28,417	Ft	\$	2.10	\$	59,675.70
143	_Misc Pavt Mrkg, Type R, Paint, Lt Turn Arrow, Temp	2	Ea	\$	225.00	\$	450.00

144	_Misc Pavt Mrkg, Type R, Paint, Rt Turn Arrow, Temp	1	Ea	\$	225.00	\$	225.00
145	_Riprap, Plain, Modified	80	Syd	\$	105.00	\$	8,400.00
146	_Riprap, Plain, LM, Modified	90	Cyd	\$	191.00	\$	17,190.00
147	Mulch Blanket, High Velocity	915	Syd	\$	1.20	\$	1,098.00
148	_Slope Restoration, Bonded Fiber Matrix	50,855	Syd	\$	2.50	\$	127,137.50
149	_Slope Restoration, High Velocity Mulch Blanket	915	Syd	\$	2.90	\$	2,653.50
150	TS Face, Bag	8	Ea	\$	250.00	\$	2,000.00
151	TS Face, Bag, Rem	8	Ea	\$	250.00	\$	2,000.00
152	Monument Preservation	3	Ea	\$	1,200.00	\$	3,600.00
153	Protect Corners	20	Ea	\$	200.00	\$	4,000.00
154	_Monument, Prec Bench Mark	6	Ea	\$	1,000.00	\$	6,000.00
155	_Hydrant, Adjust	10	Ea	\$	4,550.00	\$	45,500.00
156	_Adjust Sprinkler Head	20	Ea	\$	72.00	\$	1,440.00
157	_Relocate Sprinkler Head	20	Ea	\$	140.00	\$	2,800.00
158	_Sprinkler Head	20	Ea	\$	187.00	\$	3,740.00
159	_Bio-Swale Construction	2,811	Ft	\$	53.00	\$	148,983.00
160	_Irrigation Piping	500	Ft	\$	15.00	\$	7,500.00
161	_Temp Aggregate Base, 6 inch	122,760	Sft	\$	1.20	\$	147,312.00
162	_Contractor Allowance	150,000	Dlr	\$	1.00	\$	150,000.00
Total Bid Amount (ITEMS 1-162 incl.):							\$ 10,951,702.94

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid Items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.1 Bidder agrees that the Work will be substantially complete on or before the time set forth in the Agreement, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the time set forth in the Agreement.

ARTICLE 9 – BID SUBMITTAL

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

Fonson Company, Inc.

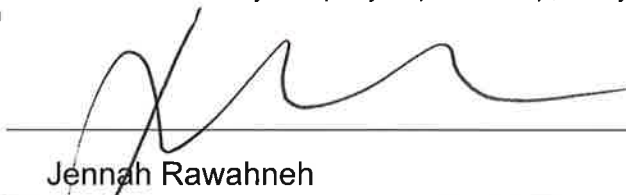
By:
[Signature]



[Printed name] Kirk Cooley, General Manager

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

Attest:
[Signature]



[Printed name] Jennah Rawahneh

Title: Project Manager

Submittal Date: 1/30/2024

Address for giving notices:

7644 Whitmore Lake Road

Brighton, MI 48116

Telephone Number: 810-231-5188

Fax Number: 810-231-5404

Contact Name and e-mail address: Kirk Cooley

kirk@fonsoninc.com

Bidder's License No.: N/A

(where applicable)

END OF SECTION 00 41 00

BID BOND

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

BIDDER (Name and Address):

Fonson Company, Inc.
7644 Whitmore Lake Road
Brighton, MA 48116

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

Westfield Insurance Company
P.O. Box 5001
Westfield Center, OH

OWNER (Name and Address):

Michigan International Technology Corridor Redevelopment Authority (MITCRA)
44405 Six Mile Road
Northville, Michigan 48168

BID

Bid Due Date: January 30, 2024
Description: Five Mile Road and Ridge Road Reconstruction Phase 1

BOND

Bond Number: N/A

Date: January 30, 2024

Penal sum: Five Percent of the Total Amount Bid----- \$ 5%
(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

Fonson Company, Inc. (Seal)

Westfield Insurance Company (Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

Signature

By:

Signature (Attach Power of Attorney)

Kyle Crowley

Theresa J Foley

Print Name

Print Name

General Manager

Attorney-In-Fact

Title

Title

Attest:

Signature

Attest:

Signature Ryan Foley

Jennah Rawahneh
Project Manager

Title Witness

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

THIS POWER OF ATTORNEY SUPERCEDES ANY PREVIOUS POWER BEARING THIS SAME POWER # AND ISSUED PRIOR TO 06/30/22, FOR ANY PERSON OR PERSONS NAMED BELOW.

POWER NO. 2140082 03

General Power of Attorney

Westfield Insurance Co. Westfield National Insurance Co. Ohio Farmers Insurance Co. Westfield Center, Ohio

CERTIFIED COPY

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint JUDY K. WILSON, VICKI S. DUNCAN, KRISTIE A. PUDVAN, SUSAN E. HURD, NICHOLAS R. HYLANT, MICHAEL SCHATZ, KATHY S. ZACK, JENNIFER A. JAROSZ, JAMIE M. LAURENCELLE, SARAYU S. NAIR, THERESA J. FOLEY, JOINTLY OR SEVERALLY

of ANN ARBOR and State of MI its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship in any penal limit.

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.

and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"Be It Resolved, that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact, may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"Be it Further Resolved, that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their National Surety Leader and Senior Executive and their corporate seals to be hereto affixed this 30th day of JUNE A.D., 2022.

Corporate Seals Affixed



WESTFIELD INSURANCE COMPANY WESTFIELD NATIONAL INSURANCE COMPANY OHIO FARMERS INSURANCE COMPANY

By: Gary W. Stumper, National Surety Leader and Senior Executive

State of Ohio County of Medina ss.:

On this 30th day of JUNE A.D., 2022, before me personally came Gary W. Stumper to me known, who, being by me duly sworn, did depose and say, that he resides in Medina, OH; that he is National Surety Leader and Senior Executive of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed



David A. Kotnik, Attorney at Law, Notary Public My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio County of Medina ss.:

I, Frank A. Carrino, Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 30th day of January A.D., 2024



Frank A. Carrino Secretary

ADDENDUM No. 01
Issued: January 23, 2024

FIVE MILE ROAD AND RIDGE ROAD RECONSTRUCTION PHASE 1
Michigan International Technology Center Redevelopment Authority (MITCRA)
OHM Job No.: 0657-21-0010

The following changes, additions, and/or clarifications to the Contract Documents shall be incorporated in said documents and shall be allowed for in the unit prices bid by the Contractor such that the unit prices indicated in the Bid Form shall represent the conditions as set forth in the Contract Documents and this addendum. The bidder shall acknowledge their receipt of this addendum on page 1 of their Bid Form submittal. This addendum will be included in its entirety in the final, executed version of the Contract Book.

The Bidder shall acknowledge receipt of this addendum on Bid Form Page 1 of their submitted offer.

This following items comprise this Addendum:

- Addendum No. 1 – 3 pages
- Coordination Clause (revised 1/22/2024) – 1 page
- Earthwork Calculations, Five Mile Road – 3 pages
- Earthwork Calculations, Ridge Road – 3 pages

ADDITIONS AND CHANGES TO THE SPECIFICATIONS

SECTION NAME/PAGE NUMBER: Section 01 22 00 Unit Prices, Page 3

Add the following to the end of Part 3.1 SCHEDULE OF UNIT PRICES :

“5. DIGITAL RECORDED VIDEO SURVEY

Digital recorded video survey shall be completed by the Contractor in accordance with Section 01 32 33 – Digital Recorded Video Survey. This item shall be considered incidental to the Mobilization pay item.”

SECTION NAME/PAGE NUMBER: Section 01 41 00 Bid Form, Page 3

Modify Pay Item #3 Mobilization, Max to Pay Item #3 Mobilization, Max. 10%.

SECTION NAME/PAGE NUMBER: Section 01 73 00 Execution, Page 1

Delete Part 1.1.A.1. Construction layout.

Be advised that construction layout will be provided by the Owner.

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

- ~~1. Construction layout.~~
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.

Replace the Coordination Clause in Appendix A in its entirety with the enclosed version. Be advised that there may be various private developments in the project vicinity that may require coordination.

ADDITIONS AND CHANGES TO THE DRAWINGS

None

QUESTIONS AND ANSWERS

Question 1: Which concrete mix is to be used for paving? Will the concrete mix be an MDOT Optimized Mix?

Answer 1: See Wayne County Special Provision for Concrete Pavement Construction on page 83 of the Special Provisions which requires Grade 3500 Concrete.

Question 2: For Stage 2 and 3 paving operations and relief cutting on Five Mile Road, will the contractor be able to close the westbound lane for stage 2 and the eastbound lane for stage 3?

Answer 2: See Plan Sheet 97 which references the ability to use traffic regulators (flaggers). This would apply for both Five Mile Road and Ridge Road. This can be utilized during pavement removal operations and paving operations to provide the room necessary to load, unload, and pave. A crossover plan must be developed and approved by the Engineer before reducing the usable travel lane to one lane. During non-working hours, two lanes of bi-directional traffic must be reopened.

Question 3: For Stage 2 paving operations and relief cutting on Ridge Road, will the contractor be able to close the northbound lane?

Answer 3: See Answer 2 above.

Question 4: The Bid Form requires submission of the Contractor's License No. – is this referring to the MDOT Prequalified Contractor Vendor Number?

Answer 4: The License No. is not required to be provided for this project.

Question 5: Do the 200 Working Days required to complete the project include days when concrete is curing?

Answer 5: If no work is being performed on days when concrete is curing those days will not count towards the 200 Working Days. Refer to Wayne County Progress Clause and Wayne County Special Provision for Working Days for more information.

Question 6: If work is performed between November 15th and April 15th, do those days count towards the 200 Working Days?

Answer 6: No, any work performed between November 15th and April 15th would not count towards the 200 Working Days. Refer to Wayne County Progress Clause and Wayne County Special Provision for Working Days for more information.

Question 7: What is the anticipated timeline for completion of this project?

Answer 7: Roads must be open to traffic 200 Working Days after the start of construction. We anticipate the roads will be open to traffic in late Fall of 2024, with possible partial restoration and punch list work remaining for final completion in the Spring of 2025.

Question 8: Will the proposed DTE duct bank work on Five Mile Road involve any lane closures?

Answer 8: It is unknown at this time whether any lane closures will be implemented for the DTE project. Please refer to the Coordination Clause on page 2 and Notice to Bidders Utility Coordination on pages 3-5 of the Special Provisions for contact information and contractor requirements to coordinate with DTE or other utility owners during construction.

Question 9: Can earthwork calculations be shared?

Answer 9: Earthwork calculations have been included for reference.

End of Addendum No. 01

General

The Wayne County Department of Public Services, local governmental agencies, utility companies, and commercial or private property owners may have construction projects occurring within the project limits during the life of this contract.

The Contractor shall coordinate his/her construction with all such projects which may be ongoing in the vicinity.

The Contractor's attention is called to the requirements of "Cooperation by the Contractor" as covered in Subsection 104.08 of the 2020 MDOT Standard Specifications for Construction.

No claim for extra compensation or adjustments in contract unit prices will be allowed on account of delay or failure of others to complete work units scheduled.

Construction Projects

The Contractor is advised of the following projects in the vicinity:

DTE will be constructing an underground electrical duct bank from Napier Road to the east side of Ridge Road on the north side of Five Mile Road. This work will cross the north and east approaches at the intersection of Ridge and Five Mile Road. The timing of this work is known to start in the late spring 2024 and will coincide with this contract's road work.

MITCRA/YCUA will be constructing a WTUA sanitary sewer on the south side of Five Mile, from west of Ridge Road, east to the existing WTUA sanitary sewer at Sta. 75+10, R. This work shall cross the south approach of the Ridge intersection and extend west beyond the limits of the road project.

Consumers Energy has relocated sections of gas main along the north side of Five Mile Road, both east and west of the Ridge intersection. This work has been mainly completed in the Fall of 2023, but additional work may carry over to the Spring of 2024.

AT&T has a riser box and handhole at Sta. 104+10, R that is in conflict with the proposed road work. This should conflict be removed prior to the Stage 3 where the proposed road paving.

There are numerous site developments that will be under construction at the same time as the road construction in 2024. Access needs to be provided to these sites. Coordination of access points will be a focus of the Progress Meetings during construction.

Community Events

The Contractor is advised of the following events in the vicinity:

None known.

20WC2000(A)

5 MILE EARTHWORK CALCULATION					
		Excavation		Embankment	
Station	Length (FT)	Ex.Area (SFT)	Ex.Volume (CYD)	Em.Area (SFT)	Em.Volume (CYD)
63+50		56.60		94.60	
64+00	50.00	51.10	99.72	115.30	194.35
64+50	50.00	51.70	95.19	128.10	225.37
65+00	50.00	56.50	100.19	113.60	223.80
65+50	50.00	0.00	52.31	65.10	165.46
66+00	50.00	102.70	95.09	231.70	274.81
66+50	50.00	98.90	186.67	191.00	391.39
67+00	50.00	112.90	196.11	127.30	294.72
67+50	50.00	139.40	233.61	34.30	149.63
68+00	50.00	166.80	283.52	34.30	63.52
68+50	50.00	181.90	322.87	30.00	59.54
69+00	50.00	165.00	321.20	29.60	55.19
69+50	50.00	135.90	278.61	49.30	73.06
70+00	50.00	122.70	239.44	10.50	55.37
70+50	50.00	152.20	254.54	34.00	41.20
71+00	50.00	107.00	240.00	74.60	100.56
71+50	50.00	84.40	177.22	222.42	275.02
72+00	50.00	81.60	153.70	220.40	410.02
72+50	50.00	77.10	146.94	183.40	373.89
73+00	50.00	76.50	142.22	155.10	313.43
73+50	50.00	73.00	138.43	166.00	297.31
74+00	50.00	75.10	137.13	143.50	286.57
74+50	50.00	80.50	144.07	128.30	251.67
75+00	50.00	86.70	154.81	148.50	256.30
75+50	50.00	92.20	165.65	45.70	179.81
76+00	50.00	126.80	202.78	24.90	65.37
76+50	50.00	149.70	256.02	21.50	42.96
77+00	50.00	173.30	299.07	17.50	36.11
77+50	50.00	259.60	400.83	14.30	29.44
78+00	50.00	231.50	454.72	14.80	26.94
78+50	50.00	215.60	413.98	8.80	21.85
79+00	50.00	139.30	328.61	19.60	26.30
79+50	50.00	144.70	262.96	15.90	32.87
80+00	50.00	124.10	248.89	22.30	35.37
80+50	50.00	114.90	221.30	24.00	42.87
81+00	50.00	110.30	208.52	27.40	47.59
81+50	50.00	125.10	217.96	91.40	110.00
82+00	50.00	111.30	218.89	96.80	174.26
82+50	50.00	107.40	202.50	91.80	174.63
83+00	50.00	125.80	215.93	72.10	151.76
83+50	50.00	128.10	235.09	65.70	127.59

84+00	50.00	128.10	237.22	102.50	155.74
84+50	50.00	123.80	233.24	59.60	150.09
85+00	50.00	142.30	246.39	29.20	82.22
85+50	50.00	200.80	317.69	25.08	50.26
86+00	50.00	182.40	354.81	17.30	39.24
86+50	50.00	220.80	373.33	19.60	34.17
87+00	50.00	220.00	408.15	17.50	34.35
87+50	50.00	228.90	415.65	8.90	24.44
88+00	50.00	231.60	426.39	12.50	19.81
88+50	50.00	231.10	428.43	4.60	15.83
89+00	50.00	232.40	429.17	4.90	8.80
89+50	50.00	211.30	410.83	4.80	8.98
90+00	50.00	168.50	351.67	24.80	27.41
90+50	50.00	128.50	275.00	51.10	70.28
91+00	50.00	127.70	237.22	154.10	190.00
91+50	50.00	110.10	220.19	157.60	288.61
92+00	50.00	88.50	183.89	152.60	287.22
92+50	50.00	85.40	161.02	158.06	287.65
93+00	50.00	85.60	158.33	195.50	327.37
93+50	50.00	102.60	174.26	210.80	376.20
94+00	50.00	112.10	198.80	172.01	354.45
94+50	50.00	90.50	187.59	104.60	256.12
95+00	50.00	83.00	160.65	47.80	141.11
95+50	50.00	104.20	173.33	23.00	65.56
96+00	50.00	99.00	188.15	17.70	37.69
96+50	50.00	98.30	182.69	23.70	38.33
97+00	50.00	107.60	190.65	23.20	43.43
97+50	50.00	144.10	233.06	84.20	99.44
98+00	50.00	170.10	290.93	64.40	137.59
98+50	50.00	153.60	299.72	71.30	125.65
99+00	50.00	143.30	274.91	84.20	143.98
99+50	50.00	108.80	233.43	144.00	211.30
100+00	50.00	105.20	198.15	44.60	174.63
100+50	50.00	128.10	216.02	37.10	75.65
101+00	50.00	121.16	230.80	16.80	49.91
101+50	50.00	121.90	225.06	85.20	94.44
102+00	50.00	119.60	223.61	114.70	185.09
102+50	50.00	93.95	197.73	105.20	203.61
103+00	50.00	95.90	175.78	64.00	156.67
103+50	50.00	73.00	156.39	66.80	121.11
104+00	50.00	68.80	131.30	82.50	138.24
104+50	50.00	46.10	106.39	47.40	120.28
105+00	50.00	44.60	83.98	59.30	98.80
105+50	50.00	77.60	113.15	77.90	127.04
106+00	50.00	49.30	117.50	67.60	134.72
106+50	50.00	60.80	101.94	71.00	128.33
107+00	50.00	58.90	110.83	75.10	135.28

107+50	50.00	58.40	108.61	85.40	148.61
108+00	50.00	59.20	108.89	79.20	152.41
108+50	50.00	63.90	113.98	72.70	140.65
109+00	50.00	68.70	122.78	70.90	132.96
109+50	50.00	76.20	134.17	42.00	104.54
110+00	50.00	83.10	147.50	43.40	79.07
110+50	50.00	122.10	190.00	61.50	97.13
111+00	50.00	93.50	199.63	39.60	93.61
111+50	50.00	114.10	192.22	42.40	75.93
112+00	50.00	113.90	211.11	42.80	78.89
112+50	50.00	102.52	200.39	39.80	76.48
113+00	50.00	87.30	175.76	59.20	91.67
113+50	50.00	87.10	161.48	60.90	111.20
114+00	50.00	88.40	162.50	63.40	115.09
114+50	50.00	82.40	158.15	66.30	120.09
115+00	50.00		76.30		61.39
		Total Ex	22256.16	Total Em	13914.76

RIDGE EARTHWORK CALCULATION					
		Excavation		Embankment	
Station	Length (FT)	Ex.Area (SFT)	Ex.Volume (CYD)	Em.Area (SFT)	Em.Volume (CYD)
104+50		43.40		17.40	
105+00	50.00	50.90	87.31	15.83	30.77
105+50	50.00	46.20	89.91	6.10	20.31
106+00	50.00	67.20	105.00	3.60	8.98
106+50	50.00	55.10	113.24	4.30	7.31
107+00	50.00	45.80	93.43	2.80	6.57
107+50	50.00	51.30	89.91	3.00	5.37
108+00	50.00	43.10	87.41	2.40	5.00
108+50	50.00	41.10	77.96	4.70	6.57
109+00	50.00	36.90	72.22	3.90	7.96
109+50	50.00	36.30	67.78	1.00	4.54
110+00	50.00	41.20	71.76	0.50	1.39
110+50	50.00	31.90	67.69	0.50	0.93
111+00	50.00	28.30	55.74	0.50	0.93
111+50	50.00	17.10	42.04	4.00	4.17
112+00	50.00	48.20	60.46	43.90	44.35
112+50	50.00	42.80	84.26	36.20	74.17
113+00	50.00	40.90	77.50	23.10	54.91
113+50	50.00	31.10	66.67	18.20	38.24
114+00	50.00	29.70	56.30	0.70	17.50
114+50	50.00	33.80	58.80	0.00	0.65
115+00	50.00	41.60	69.81	2.80	2.59
115+50	50.00	36.90	72.69	0.60	3.15
116+00	50.00	47.90	78.52	3.30	3.61
116+50	50.00	37.50	79.07	0.40	3.43
117+00	50.00	39.60	71.39	1.60	1.85
117+50	50.00	36.50	70.46	1.40	2.78
118+00	50.00	38.50	69.44	1.70	2.87
118+50	50.00	36.70	69.63	1.60	3.06
119+00	50.00	34.60	66.02	1.60	2.96
119+50	50.00	43.40	72.22	9.20	10.00
120+00	50.00	50.00	86.48	7.00	7.96
120+50	50.00	44.00	87.04	2.80	9.07
121+00	50.00	49.90	86.94	3.50	5.83
121+50	50.00	129.00	165.65	1.00	4.17
122+00	50.00	112.50	223.61	2.20	2.96
122+50	50.00	97.00	193.98	4.40	6.11
123+00	50.00	76.00	160.19	10.60	13.89
123+50	50.00	72.10	137.13	78.50	82.50
124+00	50.00	72.00	133.43	104.30	169.26
124+50	50.00	69.30	130.83	61.30	153.33

125+00	50.00	71.50	130.37	41.40	95.09
125+50	50.00	50.30	112.78	23.60	60.19
126+00	50.00	68.80	110.28	14.50	35.28
126+50	50.00	31.90	93.24	1.30	14.63
127+00	50.00	38.00	64.72	2.50	3.52
127+50	50.00	43.33	75.31	0.00	2.31
128+00	50.00	72.10	106.88	11.00	10.19
128+50	50.00	77.10	138.15	5.20	15.00
129+00	50.00	66.80	133.24	3.80	8.33
129+50	50.00	62.60	119.81	3.40	6.67
130+00	50.00	76.50	128.80	10.80	13.15
130+50	50.00	70.20	135.83	7.50	16.94
131+00	50.00	72.60	132.22	5.40	11.94
131+50	50.00	76.40	137.96	1.70	6.57
132+00	50.00	31.10	99.54	4.20	5.46
132+50	50.00	32.70	59.07	3.70	7.31
133+00	50.00	37.70	65.19	1.60	4.91
133+50	50.00	33.40	65.83	1.80	3.15
134+00	50.00	25.40	54.44	3.00	4.44
134+50	50.00	25.00	46.67	2.50	5.09
135+00	50.00	27.80	48.89	2.00	4.17
135+50	50.00	41.60	64.26	3.30	4.91
136+00	50.00	37.50	73.24	2.00	4.91
136+50	50.00	39.00	70.83	1.50	3.24
137+00	50.00	35.70	69.17	1.50	2.78
137+50	50.00	32.20	62.87	0.50	1.85
138+00	50.00	38.50	65.46	3.50	3.70
138+50	50.00	85.00	114.35	8.70	11.30
139+00	50.00	73.50	146.76	12.30	19.44
139+50	50.00	73.50	136.11	14.43	24.75
140+00	50.00	79.70	141.85	13.10	25.49
140+50	50.00	74.60	142.87	13.40	24.54
141+00	50.00	80.90	143.98	13.40	24.81
141+50	50.00	62.00	132.31	16.00	27.22
142+00	50.00	46.20	100.19	33.80	46.11
144+00		38.70		131.60	
144+50	50.00	48.80	81.02	120.60	233.52
145+00	50.00	41.40	83.52	52.40	160.19
145+50	50.00	43.90	78.98	19.70	66.76
146+00	50.00	54.80	91.39	11.60	28.98
146+50	50.00	92.30	136.20	8.90	18.98
147+00	50.00	107.40	184.91	6.04	13.83
147+50	50.00	113.30	204.35	4.20	9.48
148+00	50.00	11.30	115.37	2.60	6.30

148+50	50.00	93.60	97.13	4.60	6.67
149+00	50.00	89.00	169.07	5.05	8.94
149+50	50.00	107.10	181.57	2.50	6.99
150+00	50.00	109.00	200.09	3.05	5.14
150+50	50.00	79.20	174.26	3.60	6.16
		Total Ex	8971.26	Total Em	1963.34

ADDENDUM No. 02
Issued: January 25, 2024

FIVE MILE ROAD AND RIDGE ROAD RECONSTRUCTION PHASE 1
Michigan International Technology Center Redevelopment Authority (MITCRA)
OHM Job No.: 0657-21-0010

The following changes, additions, and/or clarifications to the Contract Documents shall be incorporated in said documents and shall be allowed for in the unit prices bid by the Contractor such that the unit prices indicated in the Bid Form shall represent the conditions as set forth in the Contract Documents and this addendum. The bidder shall acknowledge their receipt of this addendum on page 1 of their Bid Form submittal. This addendum will be included in its entirety in the final, executed version of the Contract Book.

The Bidder shall acknowledge receipt of this addendum on Bid Form Page 1 of their submitted offer.

This following items comprise this Addendum:

Addendum No. 2 – 2 pages

ADDITIONS AND CHANGES TO THE SPECIFICATIONS

None

ADDITIONS AND CHANGES TO THE DRAWINGS

PLAN SHEET: 3 – General Notes

Modify “Bases” notes as follows:

Delete the sentence “Aggregate bases shall use aggregate 21AA limestone” and replace with the following: “Aggregate bases shall be in accordance with Wayne County Special Provision for Aggregate Base.” Refer to Appendix A, pages 36-37 for more information on aggregate base materials.

PROTECTED WITH EITHER SOIL OR SEED/MULCH OR MULCH BLANKET AS DIRECTED BY

BASES

AGGREGATE BASE
AGGREGATE BASES SHALL ~~USE AGGREGATE 21AA LIMESTONE.~~

**BE IN ACCORDANCE WITH WAYNE COUNTY
SPECIAL PROVISION FOR AGGREGATE BASE**

DRAINAGE

CULVERT EXTENSIONS
THE EXTENSION OF EXISTING CULVERTS ON THIS PROJECT MAY REQUIRE EXTRA WORK

QUESTIONS AND ANSWERS

Question 1: Is this a prevailing wage project?

Answer 1: No, it is not a prevailing wage project.

Question 2: Where can I find required insurance limits in the specifications?

Answer 2: Insurance information is located in Section 00 73 00 –Supplementary General Conditions, Article 6.

End of Addendum No. 02

SUBCONTRACTOR LISTING

Bidder submits to use the following subcontractors for performance of the work in accordance with Article 12 of the Instructions to Bidders.

Note to Bidder: List all work you propose to sublet on this Contract. Include each subcontractor's name, address, phone, fax and e-mail address. Also include a description of work to be performed by subcontractor. For example: restoration, landscaping, lighting, signage, bore and jack, etc. List approximate dollar value of the subcontract.

NAME, ADDRESS & PHONE NO. OF SUBCONTRACTOR	DESCRIPTION OF WORK	APPROXIMATE DOLLAR VALUE OF SUBCONTRACT
<u>Florence Cement</u> <u>51515 Corridor</u> <u>Shelby Township, MI 48315</u> Phone: <u>248-521-1291</u> FAX: <u>586-997-3966</u> E-mail <u>tonycardillo@florencecement.com</u>	<u>Asphalt, Concrete</u>	<u>\$ 3,770,389.38</u>
<u>Poco, Inc.</u> <u>4850 S. Sheldon Road</u> <u>Canton, MI 48188</u> Phone: <u>734-397-1677</u> FAX: <u>734-397-5903</u> E-mail <u>john.clarke@pocoinc.com</u>	<u>Barricades, Electrical</u>	<u>\$ 41,196.21</u>

Uppercut Tree Service Clearing \$ 66,680.01
1720 Noble Road
Williamston, MI 48895
Phone: 517-526-0276
FAX: _____
E-mail upppercuttreeservicellc@gmail.com

Alpine Engineering Staking \$ 13,600.01
46892 West Road, Ste. 109
Novi, MI 48377
Phone: 248-926-3701
FAX: 248-926-3765
E-mail gmichalski@alpine-inc.net

Action Traffic Guardrail \$ 87,428.00
5182 S. Saginaw Road
Grand Blanc, MI 48507
Phone: 810-695-7516
FAX: 810-695-7567
E-mail Paul@actiontraffic.net

SUBCONTRACTOR LISTING

Bidder submits to use the following subcontractors for performance of the work in accordance with Article 12 of the Instructions to Bidders.

Note to Bidder: List all work you propose to sublet on this Contract. Include each subcontractor's name, address, phone, fax and e-mail address. Also include a description of work to be performed by subcontractor. For example: restoration, landscaping, lighting, signage, bore and jack, etc. List approximate dollar value of the subcontract.

NAME, ADDRESS & PHONE NO. OF SUBCONTRACTOR	DESCRIPTION OF WORK	APPROXIMATE DOLLAR VALUE OF SUBCONTRACT
<u>NERC</u> <u>143 W. Main</u> <u>Hanover, MI 49241</u> Phone: <u>517-563-2898</u> FAX: <u>517-563-2899</u> E-mail <u>nerc@plantingpros.com</u>	<u>Landscaping</u>	<u>\$ 61,109.85</u>
<u>Extreme Milling & Pulverizing</u> <u>16220 National Parkway</u> <u>Lansing, MI 48906</u> Phone: <u>(269) 679-5769</u> FAX: _____ E-mail <u>jlmillinginc@yahoo.com</u>	<u>Milling</u>	<u>\$ 127,062.01</u>

Concrete Cutting & Breaking Sawing \$ 43,510.00

157 Campbell St

River Rouge, MI 48218

Phone: 313-285-5025

FAX: 313-285-5026

E-mail spalmer@concut.com

Poco Sales, Inc Signs \$ 15,978.01

4850 S. Sheldon

Canton, MI 48188

Phone: 734-397-1677

FAX: 734-397-5903

E-mail john.clarke@pocoinc.com

Maj's Silt Fence \$ 12,200.40

9864 E. Grand River, Ste. 110-179

Brighton, MI 48116

Phone: 517-521-1340

FAX: 517-521-1309

E-mail mail@majsservices.com

SUBCONTRACTOR LISTING

Bidder submits to use the following subcontractors for performance of the work in accordance with Article 12 of the Instructions to Bidders.

Note to Bidder: List all work you propose to sublet on this Contract. Include each subcontractor's name, address, phone, fax and e-mail address. Also include a description of work to be performed by subcontractor. For example: restoration, landscaping, lighting, signage, bore and jack, etc. List approximate dollar value of the subcontract.

NAME, ADDRESS & PHONE NO. OF SUBCONTRACTOR	DESCRIPTION OF WORK	APPROXIMATE DOLLAR VALUE OF SUBCONTRACT
<u>PK Contracting</u> <u>1965 Barrett Drive</u> <u>Troy, MI 48084</u> Phone: <u>248-362-2130</u> FAX: <u>248-362-4696</u> E-mail <u>greg@pkcontracting.com</u>	<u>Striping</u>	<u>\$ 219,998.46</u>
<u>M&K Jetting</u> <u>3201 W. Michigan Ave.</u> <u>Jackson, MI 49202</u> Phone: <u>517-206-8289</u> FAX: <u>517-783-1874</u> E-mail <u>mark@mkjetting.com</u>	<u>Video Sewer</u>	<u>\$ 3,600.01</u>

Finishing Touch Video Tape \$ 2300.00

25095 25 Mile Road

Chesterfield, MI 48051

Phone: 586-749-3340

FAX: _____

E-mail finishingtouchphotovideo@gmail.com

_____ \$ _____

Phone: _____

FAX: _____

E-mail _____

_____ \$ _____

Phone: _____

FAX: _____

E-mail _____

QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm: Fonson Company, Inc.

Address: 7644 Whitmore Lake Road

Brighton, MI 48116

2. SUBMITTED TO:

Charter Township of Northville

3. SUBMITTED FOR:

Fonson Company, Inc.

Owner: MITCRA

Project Name: Five Mile Road and Ridge Road Reconstruction Phase 1

TYPE OF WORK:

Road Reconstruction

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person: Kirk Cooley

Title: General Manager

Phone: 810-231-5188

Email: estimating@fonsoninc.om

5. AFFILIATED COMPANIES:

Name: N/A

Address: _____

6. TYPE OF ORGANIZATION:

SOLE PROPRIETORSHIP

Name of Owner: _____ N/A _____

Doing Business As: _____

Date of Organization: _____

PARTNERSHIP

Date of Organization: _____ N/A _____

Type of Partnership: _____

Name of General Partner(s): _____

CORPORATION

State of Organization: _____ Michigan _____

Date of Organization: _____ 8/27/2014 _____

Executive Officers:

- President: _____ Peter D.Scodeller _____

- Vice President(s): _____ Eamonn Dwyer _____

- Treasurer: _____ Peter D. Scodeller _____

- Secretary: _____ Brendan Fons _____

LIMITED LIABILITY COMPANY

State of Organization: _____ N/A _____

Date of Organization: _____

Members: _____

JOINT VENTURE

Sate of Organization: _____ N/A _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

7. LICENSING

Jurisdiction: _____ N/A _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise: _____ N/A _____

Minority Business Enterprise: _____ N/A _____

Woman-Owned Enterprise: N/A
Small Business Enterprise: N/A
Other (_____): _____

9. BONDING INFORMATION

Bonding Company: Hylant Group
Address: 201 Depot Street
Ann Arbor, MI 48104
Bonding Agent: Theresa Foley
Address: 201 Depot Street
Ann Arbor, MI 48104
Contact Name: Theresa Foley
Phone: 734-741-0044
Aggregate Bonding Capacity: \$30,000,000.00
Available Bonding Capacity as of date of this submittal: \$17,120,804.13

10. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

11. EQUIPMENT:

MAJOR EQUIPMENT:

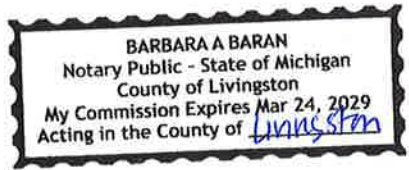
List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: Fonson Company, Inc.
BY: [Signature], Kirk Cooley
TITLE: General Manager
DATED: 1/30/2024

NOTARY ATTEST: [Signature]
SUBSCRIBED AND SWORN TO BEFORE ME
THIS 30th DAY OF January, 2024

NOTARY PUBLIC - STATE OF Michigan
MY COMMISSION EXPIRES: 3/24/2029



REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
5. Additional items as pertinent.

CURRENT EXPERIENCE

SCHEDULE A - See A Attached

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

- See Attached

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

SCHEDULE B - See Attached

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

Job Title	Employer	Start Date	End Date	Salary
M-14 Sewer Repair	MDOT	09/10/19	09/27/19	\$ 57,612.50
Holly Family Church Addition	DW Lurvey Construction	09/13/19	10/07/19	\$ 207,650.00
Spencer Elementary	Brighton Area Schools	09/12/19	05/15/20	\$ 83,913.00
Ann Arbor-Saline Rd Improvement	Washtenaw County Rd Commission	09/20/19	09/04/20	\$ 1,204,326.00
I-94 Ditching	MDOT Procurement	11/21/19	12/15/19	\$ 126,000.00

James Pappas
Regional Surety Leader

Direct line: 330-523-3288

Email: JamesPappas@westfieldgrp.com



February 21, 2023

Re: Fonson Company, Inc.

To Whom it May Concern:

The Westfield Insurance Company and Ohio Farmers Insurance Company are licensed to transact business in Michigan and are listed on the Federal Treasury List of Approved Sureties. Westfield Insurance Company has an A.M. Best Rating of "A" (Excellent) with a Financial Size Category of "XV".

Westfield Insurance Company has been the surety for Fonson Company, Inc. for many years. We have established a \$15,000,000 single and \$30,000,000 aggregate program. During our time we have executed bonds over \$20,000,000 with backlogs exceeding \$30,000,000. Fonson Company, Inc. is currently in good standing with Westfield Insurance Company. They are a valued client and our experience with this contractor has been most satisfactory.

We are aware that Fonson Company, Inc. has successfully completed many projects and with that in mind, we would favorably consider a request from Fonson Company, Inc. to provide bid, performance, and payment bonds.

Our approval of such a request would be conditioned upon applicable underwriting considerations at the time of the bond request. This letter is not an assumption of liability. We have issued this letter only as a bonding reference requested by our client.

We are proud to recommend this fine organization to you. Should you require additional information regarding Fonson Company, Inc. bond program, please feel free to contact our office at 330-523-3288.

Sincerely,

James Pappas

James Pappas
Regional Surety Leader
Westfield Insurance Company



GRETCHEN WHITMER
Governor

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
Lansing

PAUL C. AJEGBA
Director

March 2, 2023

Fonson Company, Inc.
7644 Whitmore Lake Rd
Brighton MI 48116-1662

Vendor ID: 07604

Dear Contractor:

Thank you for your interest in doing business with the Michigan Department of Transportation (MDOT) as a prequalified construction contractor. This is to inform you that the application submitted for prequalification by **Fonson Company, Inc. has been approved.**

In accordance with our [Administrative Rules](#), an **overall financial rating of \$66,086,000.00** has been established which covers numerical ratings in the classifications(s) listed below:

100	(\$100,000.00)	Cb	Hot Mix Asphalt/Bituminous Paving
20000	(\$20,000,000.00)	Ea	Grading, Drainage Structures & Agg. Cons
20000	(\$20,000,000.00)	I	Sodding And Seeding/Turf Establishment
20000	(\$20,000,000.00)	K	Sewers and Watermains
20000	(\$20,000,000.00)	N2	Clearing & Grubbing

This prequalification rating is effective until April 30, 2024 ; a renewal application must be submitted by this date to prevent removal of prequalification.

If the assigned rating is not satisfactory, the Prequalification Committee must be notified in writing within 15 days of having been advised of the rating granted. MDOT may declare a prequalified bidder ineligible to bid at any time because of developments subsequent to prequalification which, in its opinion, would affect the responsibility of the bidder or their ability to perform the contract work.

If you have any questions or need additional information, please use the following contacts:

Construction Prequalification: MDOTPrequal@michigan.gov , [Prequalification Website](#)

Bid Letting (electronic bidding process): MDOT-BidLetting@michigan.gov , [Bid Letting Website](#)

Congratulations on your status as an MDOT Construction Prequalified Contractor. MDOT's Construction Prequalification team looks forward to working with you!

Lawrence F. Strzalka
Construction Contracts Section Manager
Contract Services Division

FONSON COMPANY, INC.

CONSENT RESOLUTIONS OF A SPECIAL MEETING OF THE
BOARD OF DIRECTORS

I, the undersigned, being the sole Director of **FONSON COMPANY, INC.**, a Michigan corporation (the "Corporation"), hereby waive the necessity of notice and holding of the annual meeting of the Board of Directors of the Corporation and in its stead adopt as of June 01, 2023, the following:

RESOLVED, that the following persons are elected to the offices set forth beside his name, to serve until the next annual meeting of the Board of Directors and until the election and qualification of their respective successors (or until the effective date of their resignation, or removal with or without cause by the Board of Directors):

President:	Peter D. Scodeller
Vice President:	Edward S. Dwyer
Secretary:	Brendan J. Fons
Treasurer:	Peter D. Scodeller

RESOLVED, that Peter D. Scodeller shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

RESOLVED, that Edward S. Dwyer shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

RESOLVED, that Kirk T. Cooley, is appointed General Manager and shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

RESOLVED, that Brendan J. Fons, shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

Dated as of:
June 01, 2023



Peter D. Scodeller, President

IRAN LINKED BUSINESS CERTIFICATION

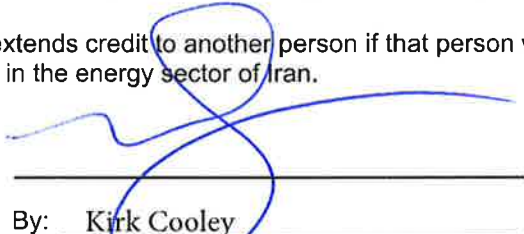
Pursuant to Michigan Public Act 517 of 2012, any Bidder that submits a bid on a request for proposal with the Charter Township of Northville shall certify that Bidder is not an Iran linked business. An Iran linked business is not eligible to submit a bid on a request for proposal with the Charter Township of Northville. See attached definitions regarding this certification.

The undersigned Bidder does hereby certify, pursuant to Michigan Public Act 517 of 2012, that:

Bidder is not a person engaging in investment activities in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or

Bidder is not a financial institution that extends credit to another person if that person will use the credit to engage in investment activities in the energy sector of Iran.

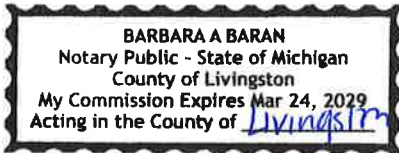
Date: 1/30/2024




By: Kirk Cooley

Its: General Manager

Subscribed and sworn to before me, a Notary Public on this 30th day of January, 2024.



Notary Public 

Livingston County, Michigan
My Commission Expires: 3/24/2029

DEFINITIONS

- (A) "Energy sector of Iran" means activities to develop petroleum or natural gas resources or nuclear power in Iran.
- (B) "Investment" means 1 or more of the following:
- i. A commitment or contribution of funds or property.
 - ii. A loan or other extension of credit.
 - iii. The entry into or renewal of a contract for goods or services.
- (C) "Investment activity" means 1 or more of the following:
- i. A person who has an investment of \$20,000,000.00 or more in the energy sector of Iran.
 - ii. A financial institution that exceeds \$20,000,000.00 or more in credit to another person, for 45 days or more, if that person will use the credit for investment in the energy sector of Iran.
- (D) "Iran" means any agency or instrumentality of Iran.
- (E) "Iran linked business" means either of the following:
- i. A person engaging in investment activities in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers or products used to construct or maintain pipelines used to transport oil or liquefied natural gas for the energy sector of Iran.
 - ii. A financial institution that extends credit to another person, if that person will use the credit to engage in investment activities in the energy sector of Iran.
- (F) "Person" means any of the following:
- i. An individual, corporation, company, limited liability company, business association, partnership, society, trust, or any other nongovernmental entity, organization, or group.
 - ii. Any governmental entity or instrumentality of a government, including a multilateral development institution, as defined in section 1701(c) (3) of the international financial institutional act, 22 USC 262r(c) (3).
 - iii. Any successor, subunit, parent company, or subsidiary of, or company under common ownership or control with, any entity described in subparagraph (i) or (ii).
- (G) "Public entity" means this state or an agency or authority of this state, school district, community college district, intermediate school district, city, village, township, county, public authority, or public airport authority.

NOTICE OF AWARD

Date of Issuance: March 7, 2024

Owner: MITCRA

Owner's Contract No.:

Engineer: OHM Advisors

Engineer's Project No.: 0657-21-0010

Project: Five Mile Road and Ridge Road
Reconstruction Phase 1

Bidder: Fonson Company, Inc.

Bidder's Address: 7644 Whitmore Lake Road, Brighton, MI 48116

TO BIDDER:

You are notified that Owner has accepted your Bid dated January 30, 2024, for the above Contract, and that you are the Successful Bidder and are awarded a Contract for the Five Mile Road and Ridge Road Reconstruction Phase 1 with work as follows:

The reconstruction of concrete and asphalt roads, curb and gutter placement, aggregate shoulder placement, underdrain installation, bioswale installation, ditch reconstruction, signing, striping, and restoration. The project is located along Five Mile Road from approximately 500 feet west of Ridge Road eastward to a location approximately 500 feet west of N Beck Road, with limited work along Ridge Road adjacent to Five Mile Road, as outlined in the contract documents.

The Contract Price of the awarded Contract as bid is: \$10,951,702.94. On February 27, 2024, at 2:00pm a meeting was held at the office of the Engineer to discuss a modified scope of work for a contract value of approximately \$8,800,000. It is the intent of Owner and Contractor to execute a Change Order No. 1 immediately after execution of the Agreement to a modified contract amount agreeable to both parties.

Six (6) unexecuted counterparts of the Contract Documents, including Agreement and Bond forms, accompany this Notice of Award.

a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 10 days of the date of receipt of this Notice of Award:

1. Deliver to Owner six (6) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security [*e.g., performance, payment, and maintenance bonds*] and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.

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

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

Owner: MITCRA


Authorized Signature

By: Mark Abbo

Title: Vice Chairman

Copy: George Tsakoff, OHM Advisors

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

THIS AGREEMENT is by and between Michigan International Technology Corridor
Redevelopment Authority (MITCRA) ("Owner") and
Fonson Company, Inc. ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

- 1.1 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: concrete and asphalt road reconstruction, stormwater infrastructure installation, and restoration.

ARTICLE 2 – THE PROJECT

- 2.1 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: The project consists of concrete and asphalt road reconstruction, curb and gutter placement, aggregate shoulder placement, underdrain installation, bioswale installation, ditch reconstruction, signing, striping, and restoration. The project is located along Five Mile Road from approximately 500 feet west of Ridge Road eastward to a location approximately 500 feet west of N Beck Road, and along Ridge Road from approximately 250 feet north of Five Mile Road to Halyard Drive.

ARTICLE 3 – ENGINEER

- 3.1 The Project was designed by OHM Advisors.
- 3.2 The Owner has retained OHM Advisors ("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

4.1 *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.

4.2 *Contract Times: Dates*

- A. Contract Times shall follow the Wayne County Department of Public Services Progress Clause included in the Appendix. The Work shall not start prior to April 15, 2024 (unless approved by the Engineer in writing). In no case shall any work commence prior to receipt of formal Notice of Award by the Owner's representative. The Contract shall be completed in 200 Working

Days. Working Days will be charged starting on the date that work is started or the date agreed upon, whichever is earlier.

4.3 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.1 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 4.2 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 \$ 2,000 per day for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.2.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 \$ 2,000 per day 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

- 5.1 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:
- A. For all Unit Price Work, an amount equal to the sum of the extended prices established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item.
- B. 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

6.1 *Submittal and Processing of Payments*

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

6.2 *Progress Payments; Retainage*

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

6.3 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 – CONTRACTOR'S REPRESENTATIONS

7.1 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 Site, conducted a thorough, alert visual examination of the Site and adjacent area, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to the 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 8 – CONTRACT DOCUMENTS

8.1 *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 3, inclusive).
 - 5. General Conditions (pages 1 to 66, inclusive).
 - 6. Supplementary Conditions (pages 1 to 12, inclusive).
 - 7. Specifications as listed in the table of contents of the Project Manual.
 - 8. Drawings consisting of 161 sheets with each sheet bearing the following general title: Five Mile Road and Ridge Road Reconstruction Phase 1
 - 9. Addendum (numbers 1 to 2, inclusive).
 - 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid
 - 11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.

- B. The documents listed in Paragraph 8.1.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 8.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 9 – MISCELLANEOUS

9.1 *Terms*

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

9.2 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interest 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.

9.3 *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.

9.4 *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.

9.5 *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 9.5:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

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

Tabulation for Bids Received on 1/30/24
Five Mile Road Reconstruction
MITCRA
OHM Job Number: 0657-21-0010

Fonson Company, Inc.
7644 Whitmore Lake Road
Brighton, MI 48116

810-231-5188

Item	Description	Estimated Quantity	Unit Price	Amount
1	_ Railroad Inspection and Flagging, CSX Railroad	50000 Dlr	\$1.00	\$50,000.00
2	_ Reimbursed Permit Fees	50000 Dlr	\$1.00	\$50,000.00
3	Mobilization, Max	1 LSUM	\$1,075,000.00	\$1,075,000.00
4	_ Clearing, Modified	2.2 Acre	\$4,400.00	\$9,680.00
5	Tree, Rem, 19 inch to 36 inch	25 Ea	\$900.00	\$22,500.00
6	Tree, Rem, 37 inch or Larger	12 Ea	\$2,000.00	\$24,000.00
7	Tree, Rem, 6 inch to 18 inch	42 Ea	\$250.00	\$10,500.00
8	Culv, Rem, Less than 24 inch	22 Ea	\$800.00	\$17,600.00
9	Culv, End, Rem, Less than 24 inch	1 Ea	\$675.00	\$675.00
10	Dr Structure, Rem	17 Ea	\$500.00	\$8,500.00
11	Sewer, Rem, Less than 24 inch	724 Ft	\$22.00	\$15,928.00
12	Curb and Gutter, Rem	2,379 Ft	\$6.50	\$15,463.50
13	Fence, Rem	730 Ft	\$8.50	\$6,205.00
14	Guardrail, Rem	678 Ft	\$4.00	\$2,712.00
15	Masonry and Conc Structure, Rem	5 Cyd	\$90.00	\$450.00
16	Pavt, Rem	23,488 Syd	\$7.00	\$164,416.00
17	Sidewalk, Rem	44 Syd	\$10.00	\$440.00
18	_ Culvert Cleanout	450 Ft	\$8.00	\$3,600.00
19	_ Removing Abandoned Gas Main	800 Ft	\$15.00	\$12,000.00
20	_ Removing Abandoned Water Main	1,862 Ft	\$18.00	\$33,516.00
21	_ Misc Obstruction, Rem	50 Cyd	\$40.00	\$2,000.00
22	_ Exploratory Excavation	20 Ea	\$450.00	\$9,000.00
23	Excavation, Earth	30,500 Cyd	\$17.00	\$518,500.00
24	Non Haz Contaminated Material Handling and Disposal, LM	300 Cyd	\$60.00	\$18,000.00
25	_ Ditch Cleanout, Modified	5 Sta	\$1,165.00	\$5,825.00
26	_ Embankment, CIP, Modified	15,879 Cyd	\$10.00	\$158,790.00
27	_ Subgrade Undercutting, Type II, Special	500 Cyd	\$70.00	\$35,000.00
28	_ Subgrade Undercutting, Type IV, Modified	4,000 Cyd	\$55.00	\$220,000.00
29	_ Grading for Detour Route	4 Ea	\$1,600.00	\$6,400.00
30	_ Stage Construction Earthwork	1 LSUM	\$222,000.00	\$222,000.00
31	Erosion Control, Check Dam, Stone	2362 Ft	\$27.00	\$63,774.00
32	Erosion Control, Inlet Protection, Fabric Drop	35 Ea	\$105.00	\$3,675.00
33	Erosion Control, Maintenance, Sediment Rem	20 Cyd	\$57.00	\$1,140.00
34	Erosion Control, Sediment Trap	6 Ea	\$154.00	\$924.00
35	Erosion Control, Silt Fence	10167 Ft	\$2.05	\$20,842.35
36	_ Erosion Control, Stone Filter at Structure	10 Ea	\$180.00	\$1,800.00
37	_ Aggregate Base, 12 inch, Modified	35783 Syd	\$19.00	\$679,877.00
38	_ Aggregate Base, 6 inch, Modified	890 Syd	\$15.00	\$13,350.00
39	_ Aggregate Base, 9 inch, Modified	21975 Syd	\$15.00	\$329,625.00
40	Maintenance Aggregate, 21AA	50 Ton	\$43.00	\$2,150.00
41	_ Aggregate Surface Cse, Modified	50 Ton	\$40.00	\$2,000.00
42	_ Shld, CI I, 10 inch, Modified	5076 Syd	\$20.00	\$101,520.00

43	Road Grade Biaxial Geogrid	1000	Syd	\$3.00	\$3,000.00
44	Culv End Sect, 12 inch	2	Ea	\$700.00	\$1,400.00
45	Culv End Sect, Conc, 12 inch	2	Ea	\$700.00	\$1,400.00
46	Culv End Sect, Conc, 18 inch	4	Ea	\$790.00	\$3,160.00
47	Culv End Sect, Conc, 24 inch	3	Ea	\$1,005.00	\$3,015.00
48	Culv, Cl A, 12 inch	204	Ft	\$53.00	\$10,812.00
49	Sewer, Cl E, 12 inch, Tr Det B	1145	Ft	\$85.00	\$97,325.00
50	Sewer, Cl E, 18 inch, Tr Det B	253	Ft	\$61.00	\$15,433.00
51	Sewer, Cl E, 24 inch, Tr Det B	237	Ft	\$108.00	\$25,596.00
52	Sewer Tap, 12 inch	1	Ea	\$355.00	\$355.00
53	Sewer, Reinf Conc Ellip, HE Cl A, 19 inch by 30 inch, Tr Det B	56	Ft	\$141.00	\$7,896.00
54	_Sewer, Cl E, 12 inch, Tr Det A	1706	Ft	\$52.00	\$88,712.00
55	_Sewer, Cl E, 24 inch, Tr Det A	896	Ft	\$71.00	\$63,616.00
56	Dr Structure, Tap, 6 inch	8	Ea	\$145.00	\$1,160.00
57	Dr Structure, Tap, 12 inch	2	Ea	\$431.31	\$862.62
58	_Dr Structure Reconstruct	39	Ft	\$200.00	\$7,800.00
59	_Catch Basin A, Cover S	25	Ea	\$3,000.00	\$75,000.00
60	_Dr Structure Cover, Adj	9	Ea	\$400.00	\$3,600.00
61	_Inlet A, Cover S	1	Ea	\$2,050.00	\$2,050.00
62	_Mh A, 48 inch dia, Cover A	5	Ea	\$3,400.00	\$17,000.00
63	_Mh A, 48 inch dia, Cover C	9	Ea	\$3,035.00	\$27,315.00
64	_Mh A, 48 inch dia, Cover S	2	Ea	\$3,045.00	\$6,090.00
65	_Mh_A_60 inch dia, Cover S	1	Ea	\$4,500.00	\$4,500.00
66	_Mh_A_60 inch dia, Cover C	1	Ea	\$4,500.00	\$4,500.00
67	_San Structure Cover, Adj	9	Ea	\$700.00	\$6,300.00
68	_Storm Water Pollution Control Unit, 12.1 cfs	1	Ea	\$35,000.00	\$35,000.00
69	_Storm Water Pollution Control Unit, 8.6 cfs	1	Ea	\$35,000.00	\$35,000.00
70	_Storm Water Pollution Control, Unit, 9.6 cfs	1	Ea	\$54,000.00	\$54,000.00
71	Underdrain Outlet, 6 inch	354	Ft	\$18.00	\$6,372.00
72	Underdrain, Outlet Ending, 6 inch	15	Ea	\$215.00	\$3,225.00
73	_Underdrain, Subgrade, 6 inch, Modified	5685	Ft	\$15.00	\$85,275.00
74	_Underdrain, Subgrade, Shallow, 6 inch	9674	Ft	\$12.00	\$116,088.00
75	HMA Surface, Rem	38283	Syd	\$5.00	\$191,415.00
76	Pavt for Butt Joints, Rem	232	Syd	\$28.30	\$6,565.60
77	HMA, 4EL	162	Ton	\$158.00	\$25,596.00
78	HMA, 5EL	71	Ton	\$217.00	\$15,407.00
79	_Temp HMA Surface, 3.5 inch	113599	Sft	\$3.40	\$386,236.60
80	_Bit Mixture for Patching, Temp	200	Ton	\$200.00	\$40,000.00
81	_Misc HMA Approach	241	Ton	\$173.00	\$41,693.00
82	_Misc HMA, 3EMH	69	Ton	\$178.00	\$12,282.00
83	_Misc HMA, 4EMH	15	Ton	\$247.00	\$3,705.00
84	_Misc HMA, 5EMH	15	Ton	\$251.00	\$3,765.00
85	Joint, Contraction, Cp	32287	Ft	\$15.00	\$484,305.00
86	Joint, Expansion, E2	833	Ft	\$28.00	\$23,324.00
87	Joint, Plane-of-Weakness, W	746	Ft	\$3.30	\$2,461.80
88	_Cold Weather Protection, Conc Pavt	15937	Syd	\$0.01	\$159.37
89	_Conc Pavt, Misc, Nonreinf, 10 inch, Modified	2633	Syd	\$78.00	\$205,374.00
90	_Conc Pavt, Misc, Nonreinf, ISC-3, 10 inch	3212	Syd	\$79.00	\$253,748.00
91	_Conc Pavt, Nonreinf, 10 inch, Modified	28471	Syd	\$53.26	\$1,516,365.46

92	_ Conc Pavt, Nonreinf, ISC-3, 10 inch	9599 Syd	\$55.00	\$527,945.00
93	Joint, Contraction, Crg	151 Ft	\$24.00	\$3,624.00
94	Lane Tie, Epoxy Anchored	518 Ea	\$11.50	\$5,957.00
95	Driveway, Nonreinf Conc, 8 inch	434 Syd	\$69.00	\$29,946.00
96	Curb and Gutter, Conc, Det F1	316 Ft	\$49.00	\$15,484.00
97	Driveway Opening, Conc, Det M	242 Ft	\$49.00	\$11,858.00
98	_ Spillway, Conc, Modified	86 Ft	\$139.00	\$11,954.00
99	Detectable Warning Surface	40 Ft	\$65.00	\$2,600.00
100	Curb Ramp Opening, Conc	44 Ft	\$15.50	\$682.00
101	Curb Ramp, Conc, 4 inch	404 Sft	\$18.00	\$7,272.00
102	Guardrail Approach Terminal, Type 2M	4 Ea	\$3,700.00	\$14,800.00
103	Guardrail Reflector	88 Ea	\$7.00	\$616.00
104	Guardrail, Type MGS-8D, 72 inch Post	2025 Ft	\$32.00	\$64,800.00
105	_ Field Office	18 Mo	\$2,500.00	\$45,000.00
106	Sign, Type II, Rem	1 Ea	\$10.00	\$10.00
107	Sign, Type III, Rem	68 Ea	\$10.00	\$680.00
108	Sign, Type V, Rem	3 Ea	\$10.00	\$30.00
109	Ground Mtd Sign Support, Rem	58 Ea	\$10.00	\$580.00
110	Sign, Type B, Perm	358 Sft	\$41.00	\$14,678.00
111	Pavt Mrkg, Ovly Cold Plastic, 12 inch, Cross Hatching, Yellow	254 Ft	\$6.50	\$1,651.00
112	Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	185 Ft	\$15.95	\$2,950.75
113	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym	6 Ea	\$225.00	\$1,350.00
114	Pavt Mrkg, Ovly Cold Plastic, Railroad Sym	2 Ea	\$375.00	\$750.00
115	Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym	2 Ea	\$225.00	\$450.00
116	Pavt Mrkg, Sprayable Thermopl, 6 inch, White	11695 Ft	\$0.48	\$5,613.60
117	Pavt Mrkg, Sprayable Thermopl, 6 inch, Yellow	21256 Ft	\$0.48	\$10,202.88
118	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	25 Ea	\$65.00	\$1,625.00
119	Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	25 Ea	\$0.01	\$0.25
120	Lighted Arrow, Type C, Furn	2 Ea	\$500.00	\$1,000.00
121	Lighted Arrow, Type C, Oper	2 Ea	\$0.01	\$0.02
122	Minor Traf Devices	1 LSUM	\$1,000,000.00	\$1,000,000.00
123	Pavt Mrkg, Longit, 6 inch or Less Width, Rem	9915 Ft	\$0.65	\$6,444.75
124	Pavt Mrkg, Longit, Greater than 6 inch Width, Rem	158 Ft	\$0.85	\$134.30
125	Pavt Mrkg, Type NR, Paint, 24 inch, Stop Bar	35 Ft	\$6.00	\$210.00
126	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, White, Temp	31635 Ft	\$0.49	\$15,501.15
127	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, Yellow, Temp	31787 Ft	\$0.49	\$15,575.63
128	Plastic Drum, Fluorescent, Furn	600 Ea	\$20.00	\$12,000.00
129	Plastic Drum, Fluorescent, Oper	600 Ea	\$0.01	\$6.00
130	Sign Cover	5 Ea	\$50.00	\$250.00
131	Sign, Portable, Changeable Message, Furn	4 Ea	\$3,000.00	\$12,000.00
132	Sign, Portable, Changeable Message, Oper	4 Ea	\$1.00	\$4.00
133	Sign, Type A, Temp, Prismatic, Furn	66 Sft	\$7.00	\$462.00
134	Sign, Type A, Temp, Prismatic, Oper	66 Sft	\$0.01	\$0.66
135	Sign, Type B, Temp, Prismatic, Furn	1590 Sft	\$5.00	\$7,950.00
136	Sign, Type B, Temp, Prismatic, Oper	1590 Sft	\$0.01	\$15.90
137	Sign, Type B, Temp, Prismatic, Spec, Furn	235 Sft	\$8.00	\$1,880.00
138	Sign, Type B, Temp, Prismatic, Spec, Oper	235 Sft	\$0.01	\$2.35
139	Traf Regulator Control	1 LSUM	\$350,000.00	\$350,000.00
140	_ Misc Pavt Mrkg, Type R, Paint, 24 inch, White, Stop Bar, Temp	33 Ft	\$15.00	\$495.00

141	_ Misc Pavt Mrkg, Type R, Paint, 4 inch, White, Temp	18247 Ft	\$2.10	\$38,318.70
142	_ Misc Pavt Mrkg, Type R, Paint, 4 inch, Yellow, Temp	28417 Ft	\$2.10	\$59,675.70
143	_ Misc Pavt Mrkg, Type R, Paint, Lt Turn Arrow, Temp	2 Ea	\$225.00	\$450.00
144	_ Misc Pavt Mrkg, Type R, Paint, Rt Turn Arrow, Temp	1 Ea	\$225.00	\$225.00
145	_ Riprap, Plain, Modified	80 Syd	\$105.00	\$8,400.00
146	_ Riprap, Plain, LM, Modified	90 Cyd	\$191.00	\$17,190.00
147	Mulch Blanket, High Velocity	915 Syd	\$1.20	\$1,098.00
148	_ Slope Restoration, Bonded Fiber Matrix	50855 Syd	\$2.50	\$127,137.50
149	_ Slope Restoration, High Velocity Mulch Blanket	915 Syd	\$2.90	\$2,653.50
150	TS Face, Bag	8 Ea	\$250.00	\$2,000.00
151	TS Face, Bag, Rem	8 Ea	\$250.00	\$2,000.00
152	Monument Preservation	3 Ea	\$1,200.00	\$3,600.00
153	Protect Corners	20 Ea	\$200.00	\$4,000.00
154	_ Monument, Prec Bench Mark	6 Ea	\$1,000.00	\$6,000.00
155	_ Hydrant, Adjust	10 Ea	\$4,550.00	\$45,500.00
156	_ Adjust Sprinkler Head	20 Ea	\$72.00	\$1,440.00
157	_ Relocate Sprinkler Head	20 Ea	\$140.00	\$2,800.00
158	_ Sprinkler Head	20 Ea	\$187.00	\$3,740.00
159	_ Bio-Swale Construction	2811 Ft	\$53.00	\$148,983.00
160	_ Irrigation Piping	500 Ft	\$15.00	\$7,500.00
161	_ Temp Aggregate Base, 6 inch	122760 Sft	\$1.20	\$147,312.00
162	_ Contractor Allowance	150000 Dlr	\$1.00	\$150,000.00

Total Bid Amount (ITEMS 1-162 incl.):

\$10,951,702.94

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

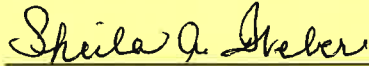
This Agreement will be effective on 4/5/24 (which is the Effective Date of the Contract).

OWNER:

Michigan International Technology Corridor
Redevelopment Authority (MITCRA)

By: 
MARK J. ABBOT

Title: NORTHVILLE TOWNSHIP SUPERVISOR

Attest: 
SHEILA A. WEBER

Title: WITNESS EXECUTIVE ADMINISTRATOR


Address for giving notices:

44405 Six Mile Road

Northville, MI 48168

CONTRACTOR:

Fonson Company, Inc.

By: 

Title: GENERAL MANAGER

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

Attest: 

Title: Witness

Address for giving notices:

7644 Whitmore Lake Road

Brighton, MI 48116

License No.: _____
(where applicable)

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

NOTICE TO PROCEED

Owner:	MITCRA	Owner's Contract No.:	
Contractor:	Fonson Company Inc.	Contractor's Project No.:	
Engineer:	OHM Advisors	Engineer's Project No.:	0657-21-0010
Project:	Five Mile Road and Ridge Road Reconstruction Phase 1	Contract Name:	Five Mile Road and Ridge Road Reconstruction Phase 1
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 2024.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____.

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

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

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
03/21/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER 1-517-482-2211 Acisure LLC dba Lyman & Sheets Insurance Agency 2213 E. Grand River Ave. Lansing, MI 48912		CONTACT NAME: Kathy Satterlee PHONE (A/C, No, Ext): 517-319-5129 FAX (A/C, No): E-MAIL ADDRESS: kathys@lymansheets.com															
INSURED Fonson Company Inc 7644 Whitmore Lake Road Brighton, MI 48116 USA		<table border="1"> <thead> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> </thead> <tbody> <tr> <td>INSURER A: OLD REPUBLIC INS CO</td> <td>24147</td> </tr> <tr> <td>INSURER B: CINCINNATI INS CO</td> <td>10677</td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </tbody> </table>		INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: OLD REPUBLIC INS CO	24147	INSURER B: CINCINNATI INS CO	10677	INSURER C:		INSURER D:		INSURER E:		INSURER F:	
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COVERAGES

CERTIFICATE NUMBER: 750198318

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> XCU/Contractual Liab GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X	X	MWZY 312353	03/01/24	03/01/25	EACH OCCURRENCE	\$ 2,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 500,000
							MED EXP (Any one person)	\$ 10,000
							PERSONAL & ADV INJURY	\$ 2,000,000
							GENERAL AGGREGATE	\$ 4,000,000
							PRODUCTS - COMP/OP AGG	\$ 4,000,000
								\$
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY	X	X	MWTB 312352	03/01/24	03/01/25	COMBINED SINGLE LIMIT (Ea accident)	\$ 2,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
B	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ none	X	X	EXS 0011266	03/01/24	03/01/25	EACH OCCURRENCE	\$ 4,000,000
							AGGREGATE	\$ 4,000,000
								\$
A	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			MWC 312354	03/01/24	03/01/25	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER	
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 Additional Insured and Waiver of Subrogation status apply when required by written contract. These policies are primary and not contributory to any other insurance. Policy contains 60 day notice of cancellation

Additional Insured: MITCRA - Michigan International Technology Corridor Redevelopment Authority, Orchard, Hiltz & McCliment, Inc., are Additional Insured.

CERTIFICATE HOLDER**CANCELLATION**


MITCRA
 Michigan International Technology Corridor

 Redevelopment Authority
 44405 Six Mile Road
 Northville, MI 48168

 USA

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE





OLD REPUBLIC INSURANCE COMPANY

POLICYHOLDER SERVICE OFFICE:

445 South Moorland Road
Brookfield, Wisconsin 53005
(877) 797-3400

Named Insured: Fonson Company Inc

Policy Number: MWZY 312353 24

Policy Term: 03/01/24 - 03/01/25

POLICYHOLDER NOTICE INDEX

NOTICES NOT MADE A PART OF THIS POLICY AT TIME OF ISSUANCE:

<u>Form Number</u>	<u>Description</u>
ORRM 2114 01 23	POLICYHOLDER DISCLOSURE NOTICE OF TERRORISM INSURANCE COVERAGE
IL PH KY 0027 (04/17)	KY PREMIUM SURCHARGE
IL PH MI 0029 (04/17)	MI COMMERCIAL FILING EXEMPTION NOTICE
GL PH TX 0127 (04/17)	IMPORTANT NOTICE TO POLICYHOLDERS SILICA OR SILICA-RELATED DUST EXCLUSION (TX)
IL PH TX 0035 (05/20)	TX CONSUMER NOTICE

ORRM 2032 01 16

OLD REPUBLIC INSURANCE COMPANY

FORMS INDEX

FORMS MADE A PART OF THIS POLICY AT TIME OF ISSUANCE:

<u>Form Number</u>	<u>Description</u>
J-01 (11/21)	COMMERCIAL GENERAL LIABILITY (OCCURRENCE) INSURANCE POLICY JACKET
CG DEC GN 0000 05 21	COMMERCIAL GENERAL LIABILITY DECLARATIONS (OCCURRENCE)
ORRM 2008 01 16	FORMS INDEX
ORRM 2009	SCHEDULE OF NAMED INSUREDS
PIL 042 01 16	BROAD FORM NAMED INSURED
CG QR GN 0000 12 07	QUICK REFERENCE COMMERCIAL GENERAL LIABILITY COVERAGE PART
GL 572 018 0319	COMPOSITE RATE ENDORSEMENT - COMPREHENSIVE GENERAL LIABILITY
IL 00 17 11 98	COMMON POLICY CONDITIONS
PIL 008 12 03	ECONOMIC AND TRADE SANCTIONS CONDITION
CG 00 01 04 13	COMMERCIAL GENERAL LIABILITY COVERAGE FORM
PGL 009 11 03	BODILY INJURY DEFINITION CHANGES
PGL 021 11 03	KNOWLEDGE AND NOTICE OF OCCURRENCE, OFFENSE, CLAIM OR SUIT
PGL 046 11 03	WATERCRAFT COVERAGE EXTENSION
PGL 096 02 08	ELEVATOR COLLISION ENDORSEMENT
PGL 205 11 14	FELLOW EMPLOYEE COVERAGE
PGL 206 01 18	INCIDENTAL MEDICAL MALPRACTICE LIABILITY COVERAGE
PGL 233 01 16	EXPECTED OR INTENDED INJURY CHANGES
PIL 028 05 10	DESIGNATED ENTITY - NOTICE OF CANCELLATION PROVIDED BY US
PIL 029 10 10	NOTICE OF CANCELLATION TO CERTIFICATE HOLDERS

ORRM 2008 01 16

OLD REPUBLIC INSURANCE COMPANY

FORMS INDEX

FORMS MADE A PART OF THIS POLICY AT TIME OF ISSUANCE:

<u>Form Number</u>	<u>Description</u>
PIL 046 01 16	UNINTENTIONAL FAILURE TO DISCLOSE HAZARDS
GL 572 011 0319	ADDITIONAL INSUREDS - ATHLETIC PARTICIPANTS
CG 20 10 12 19	ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - SCHEDULED PERSON OR ORGANIZATION
CG 20 28 12 19	ADDITIONAL INSURED - LESSOR OF LEASED EQUIPMENT
CG 20 37 12 19	ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - COMPLETED OPERATIONS
CG 20 44 12 19	ADDITIONAL INSURED - VENDORS - AUTOMATIC STATUS WHEN REQUIRED IN AGREEMENT
CG 04 73 11 20	MI CHANGES - EMPLOYEE BENEFITS LIABILITY COVERAGE
CG 02 24 10 93	EARLIER NOTICE OF CANCELLATION PROVIDED BY US
CG 04 37 05 14	ELECTRONIC DATA LIABILITY
CG 20 01 12 19	PRIMARY AND NONCONTRIBUTORY - OTHER INSURANCE CONDITION
CG 21 65 12 04	TOTAL POLLUTION EXCLUSION WITH A BUILDING HEATING, COOLING AND DEHUMIDIFYING EQUIPMENT EXCEPTION AND A HOSTILE FIRE EXCEPTION
CG 21 70 01 15	CAP ON LOSSES FROM CERTIFIED ACTS OF TERRORISM
CG 24 13 04 13	AMENDMENT OF PERSONAL AND ADVERTISING INJURY DEFINITION
CG 24 17 10 01	CONTRACTUAL LIABILITY - RAILROADS
CG 24 53 12 19	WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION) - AUTOMATIC
CG 99 09 12 19	PREMIUM AUDIT NONCOMPLIANCE CHARGE
IL 09 85 12 20	DISCLOSURE PURSUANT TO TERRORISM RISK INSURANCE ACT
CG 01 68 11 20	MI CHANGES
IL 02 86 04 17	MI CHANGES - CANCELLATION AND NONRENEWAL

ORRM 2008 01 16

OLD REPUBLIC INSURANCE COMPANY

FORMS INDEX

FORMS MADE A PART OF THIS POLICY AT TIME OF ISSUANCE:

<u>Form Number</u>	<u>Description</u>
CG 01 34 08 03	MO CHANGES - POLLUTION EXCLUSION ENDORSEMENT
PGL 003 11 03	ASBESTOS EXCLUSION ENDORSEMENT
PGL 025 11 03	LEAD EXCLUSION ENDORSEMENT
CG 21 41 12 19	EXCLUSION - INTERCOMPANY PRODUCTS SUITS
CG 21 47 12 07	EMPLOYMENT-RELATED PRACTICES EXCLUSION
CG 21 54 12 19	EXCLUSION - DESIGNATED OPERATIONS COVERED BY A CONTROLLED (WRAP-UP) INSURANCE PROGRAM
CG 21 67 12 04	FUNGI OR BACTERIA EXCLUSION
CG 21 96 03 05	SILICA OR SILICA-RELATED DUST EXCLUSION
IL 00 21 09 08	NUCLEAR ENERGY LIABILITY EXCLUSION ENDORSEMENT

ORRM 2008 01 16

IL 10 (12/06) OLD REPUBLIC INSURANCE COMPANY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NOTICE OF CANCELLATION TO CERTIFICATE HOLDERS

This endorsement modifies the notice of cancellation of insurance provided hereunder by adding the following:

- A.** In the event this policy is cancelled for any permissible reason, other than for nonpayment of premium, we shall endeavor to provide advance written notice of cancellation to certificate holders set out in the schedule on file with the Company, after notifying the first Named Insured of such cancellation. Notice of cancellation to certificate holders may be made by any commercially reasonable means, including mail, electronic mail, facsimile transmission or courier service.
- B.** This advance written notification of a cancellation of coverage is intended as a courtesy only. Our failure to provide such advance written notification will not extend the policy cancellation date, nor negate cancellation of the policy.

All other terms and conditions of this policy remain unchanged.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
All persons or organizations when required by written contract or agreement	All Locations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – LESSOR OF LEASED EQUIPMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):

All persons or organizations when required by written contract or agreement

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your maintenance, operation or use of equipment leased to you by such person(s) or organization(s).

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, this insurance does not apply to any "occurrence" which takes place after the equipment lease expires.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
All persons or organizations when required by written contract or agreement	All completed operations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
 2. Available under the applicable limits of insurance;
- whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - VENDORS - AUTOMATIC STATUS WHEN REQUIRED IN AGREEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

- A.** Section II – Who Is An Insured is amended to include as an additional insured any "vendor", but only with respect to liability for "bodily injury" or "property damage" arising out of "your product" which is distributed or sold in the regular course of the "vendor's" business.
- However, the insurance afforded to such "vendor":
1. Only applies to the extent permitted by law; and
 2. Will not be broader than that which you are required by the contract or agreement to provide for such "vendor".
- B.** With respect to the insurance afforded to any "vendor", the following additional exclusions apply:
1. The insurance afforded the "vendor" does not apply to:
 - a. "Bodily injury" or "property damage" for which the "vendor" is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that the "vendor" would have in the absence of the contract or agreement;
 - b. Any express warranty unauthorized by you;
 - c. Any physical or chemical change in the product made intentionally by the "vendor";
 - d. Repackaging, except when unpacked solely for the purpose of inspection, demonstration, testing, or the substitution of parts under instructions from the manufacturer, and then repackaged in the original container;
 - e. Any failure to make such inspections, adjustments, tests or servicing as the "vendor" has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products;
 2. This insurance does not apply to any insured person or organization, from whom you have acquired such products, or any ingredient, part or container, entering into, accompanying or containing such products.
- C.** With respect to the insurance afforded to these "vendors", the following is added to **Section III – Limits Of Insurance:**
- The most we will pay on behalf of the "vendor" is the amount of insurance:
1. Required by the contract or agreement; or
 2. Available under the applicable limits of insurance;
- whichever is less.
- f.** Demonstration, installation, servicing or repair operations, except such operations performed at the "vendor's" premises in connection with the sale of the product;
- g.** Products which, after distribution or sale by you, have been labeled or relabeled or used as a container, part or ingredient of any other thing or substance by or for the "vendor"; or
- h.** "Bodily injury" or "property damage" arising out of the sole negligence of the "vendor" for its own acts or omissions or those of its employees or anyone else acting on its behalf. However, this exclusion does not apply to:
- (1) The exceptions contained in Subparagraphs **d.** or **f.**; or
 - (2) Such inspections, adjustments, tests or servicing as the "vendor" has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products.

This endorsement shall not increase the applicable limits of insurance.

D. The following definition is added to the **Definitions** section:

"Vendor" means any person or organization who distributes or sells "your product" in the regular course of its business when you have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**EARLIER NOTICE OF CANCELLATION
PROVIDED BY US**

This endorsement modifies insurance provided under the following:

- COMMERCIAL GENERAL LIABILITY COVERAGE PART
- LIQUOR LIABILITY COVERAGE PART
- POLLUTION LIABILITY COVERAGE PART
- PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Number of Days' Notice 60

(If no entry appears above, information required to complete this Schedule will be shown in the Declarations as applicable to this endorsement.)

For any statutorily permitted reason other than nonpayment of premium, the number of days required for notice of cancellation, as provided in paragraph 2. of either the CANCELLATION Common Policy Condition or as amended by an applicable state cancellation endorsement, is increased to the number of days shown in the Schedule above.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

- (1) The additional insured is a Named Insured under such other insurance; and

- (2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTUAL LIABILITY – RAILROADS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Scheduled Railroad: Any railroad</p>	<p>Designated Job Site: All projects of the named insured where required by written contract</p>
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(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

With respect to operations performed for, or affecting, a Scheduled Railroad at a Designated Job Site, the definition of "insured contract" in the Definitions section is replaced by the following:

9. "Insured Contract" means:

- a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract";
- b. A sidetrack agreement;
- c. Any easement or license agreement;
- d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;
- e. An elevator maintenance agreement;
- f. That part of any other contract or agreement pertaining to your business (including an indemnification of a municipality in connection with work performed for a municipality) under which you assume the tort liability of another party to pay for "bodily injury" or "property damage" to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph f. does not include that part of any contract or agreement:

- (1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:
 - (a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or
 - (b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage;
- (2) Under which the insured, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in Paragraph (1) above and supervisory, inspection, architectural or engineering activities.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY
AGAINST OTHERS TO US (WAIVER OF SUBROGATION) –
AUTOMATIC**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions**:

We waive any right of recovery against any person or organization, because of any payment we make under this Coverage Part, to whom the insured has waived its right of recovery in a written contract or agreement. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person or organization prior to loss.

IL 10 (12/06) OLD REPUBLIC INSURANCE COMPANY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED/DESIGNATED INSURED AMENDMENT - PRIMARY AND
NON-CONTRIBUTORY**

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

SCHEDULE

Designated Person(s) or Organization(s):

All persons or organizations where required by written contract.

WHO IS AN INSURED (SECTION II) is amended to include the person(s) or organization(s) shown in the above Schedule, but only with respect to "accidents" arising out of work being performed for such person(s) or organization(s).

As respects any person(s) or organization(s) shown in the above Schedule with whom you have agreed in a written contract to provide primary insurance on a non-contributory basis, this insurance will be primary to and non-contributing with any other insurance available to such person(s) or organizations(s).

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**DESIGNATED INSURED FOR
COVERED AUTOS LIABILITY COVERAGE**

This endorsement modifies insurance provided under the following:

- AUTO DEALERS COVERAGE FORM
- BUSINESS AUTO COVERAGE FORM
- MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" for Covered Autos Liability Coverage under the Who Is An Insured provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured:
Endorsement Effective Date:

SCHEDULE

Name Of Person(s) Or Organization(s):
As required by contract or agreement
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Each person or organization shown in the Schedule is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Paragraph A.1. of Section II – Covered Autos Liability Coverage in the Business Auto and Motor Carrier Coverage Forms and Paragraph D.2. of Section I – Covered Autos Coverages of the Auto Dealers Coverage Form.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY
AGAINST OTHERS TO US (WAIVER OF SUBROGATION) –
AUTOMATIC WHEN REQUIRED BY WRITTEN
CONTRACT OR AGREEMENT**

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

The **Transfer Of Rights Of Recovery Against Others To Us** Condition does not apply to any person(s) or organization(s) for whom you are required to waive subrogation with respect to the coverage provided under this Coverage Form, but only to the extent that subrogation is waived:

- A. Under a written contract or agreement with such person(s) or organization(s); and
- B. Prior to the "accident" or the "loss."

IL 10 (12/06) OLD REPUBLIC INSURANCE COMPANY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

EARLIER NOTICE OF CANCELLATION PROVIDED BY US

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

SCHEDULE

Number of Days' Notice 10 (For non-payment of premium)

Number of Days' Notice 60 (For any other reason, other than
nonpayment of premium)

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

The number of days required for notice of Cancellation, as provided in the Cancellation policy Condition or as amended by an applicable state endorsement, is increased to the number of days shown in the Schedule.

OLD REPUBLIC INSURANCE COMPANY

WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY INSURANCE POLICY

EARLIER NOTICE OF CANCELATION OR NONRENEWAL PROVIDED BY US

SCHEDULE

Number of Days' Notice of Cancellation Non- payment of Premium	Number of Days' Notice of Cancellation Reasons Other Than Non-payment of Premium or Nonrenewal	State(s) Applicable
<u>10</u>	<u>60</u>	<u>SEE ITEM 3 . A .</u>
Number of Days' Notice of Nonrenewal		State(s) Applicable

- A.** For any statutorily permitted reason for cancellation, the number of days required for notice of cancellation, as provided in the Cancellation Condition or as amended by an applicable state cancellation endorsement, is increased to the number of days shown in the Schedule.
- B.** For any statutorily permitted nonrenewal, the number of days required for notice of nonrenewal as amended by an applicable state endorsement is increased to the number of days shown in the Schedule.

POLICY NUMBER: **MWC 312354 24**

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

AS REQUIRED BY WRITTEN CONTRACT, TO THE EXTENT ALLOWABLE BY LAW.

THIS FORM IS NOT APPLICABLE IN: KY, TX

DATE OF ISSUE: **03-21-24**

OLD REPUBLIC INSURANCE COMPANY

WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY POLICY

NOTICE OF CANCELATION TO CERTIFICATE HOLDERS ENDORSEMENT

This endorsement modifies the notice of cancellation of insurance provided hereunder by adding the following:

- A.** In the event this policy is canceled for any permissible reason, other than for nonpayment of premium, we shall endeavor to provide advance written notice of cancellation to certificate holders set out in the schedule on file with the Company, after notifying the Insured first named in item 1 of the Information Page of such cancellation. Notice of cancellation to certificate holders may be made by any commercially reasonable means, including mail, electronic mail, facsimile transmission or courier service.
- B.** This advance written notification of a cancellation of coverage is intended as a courtesy only. Our failure to provide such advance written notification will not extend the policy cancellation date, nor negate cancellation of the policy.

All other terms and conditions of this policy remain unchanged.

TEXAS WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

This endorsement applies only to the insurance provided by the policy because Texas is shown in Item 3.A. of the Information Page.

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule, but this waiver applies only with respect to bodily injury arising out of the operations described in the Schedule where you are required by a written contract to obtain this waiver from us.

This endorsement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

The premium for this endorsement is shown in the Schedule.

Schedule

1. Specific Waiver

Name of person or organization

 Blanket Waiver

Any person or organization for whom the Named Insured has agreed by written contract to furnish this waiver.

2. Operations:

ALL TEXAS OPERATIONS

3. Premium:

The premium charge for this endorsement shall be 0 percent of the premium developed on payroll in connection with work performed for the above person(s) or organization(s) arising out of the operations described.

4. Advance Premium:

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective **03-01-2024** Policy No. **MWC 312354 24**

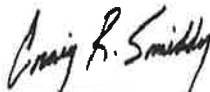
Endorsement No.

Insured **SCODELLER CONSTRUCTION INC**

Premium \$ **INCL.**

Insurance Company **OLD REPUBLIC INSURANCE COMPANY**

Countersigned By



OLD REPUBLIC INSURANCE COMPANY

WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY POLICY

DESIGNATED ENTITY - NOTICE OF CANCELATION PROVIDED BY US ENDORSEMENT

SCHEDULE

Number of Days Notice of Cancellation: 30

Person or Organization:

When required by written contract

Address:

Provisions

If we cancel this policy for any statutorily permitted reason other than nonpayment of premium, and a number of days is shown for cancellation in the schedule above, we will mail notice of cancellation to the person or organization shown in the schedule above. We will mail such notice to the address shown in the schedule above at least the number of days shown for cancellation in the schedule above before the effective date of cancellation.

MID-CONTINENT CASUALTY COMPANY
1437 S. BOULDER TULSA OK 74119

**COMMERCIAL GENERAL LIABILITY POLICY
DECLARATION**

POLICY NO: 04OCP002007243
RENEWAL NO:

Named Insured and Mailing Address	Agent Name and Mailing Address	
MITCRA - Michigan Internation Technology See Named Insured Endorsement 44405 Six Mile Rd Northville, MI 48168	123ocp.com 1285 Drummers Lane Suite 305 Wayne, PA 19087	375502

POLICY PERIOD: FROM 3/22/2024 TO 3/22/2025 at 12:01 A.M. Standard Time at your mailing address shown above

THE NAMED INSURED IS Municipality

BUSINESS DESCRIPTION: _____

IN RETURN FOR THE PAYMENT OF THE PREMIUM, AND SUBJECT TO ALL THE TERMS OF THIS POLICY, WE AGREE WITH YOU TO PROVIDE THE INSURANCE AS STATED IN THIS POLICY.

THIS POLICY CONSISTS OF THE FOLLOWING COVERAGE PARTS FOR WHICH A PREMIUM IS INDICATED. THIS PREMIUM MAY BE SUBJECT TO ADJUSTMENT.

	PREMIUM
COMMERCIAL GENERAL LIABILITY COVERAGE PART	\$ _____
OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART	\$ <u>9,692.00</u>
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART	\$ _____
RAILROAD PROTECTIVE LIABILITY COVERAGE PART	\$ _____
SURCHARGE / TAXES (if applicable)	\$ _____
TOTAL	\$ <u>9,692.00</u>

REPORTING BASIS: None

Form(s) and Endorsement(s) made a part of this policy at this time*:
ML1510 (04 97), MI9009 (11 97), CG0009 (04 13), CG2031 (12 19), ML1443 (04 17), ML1344 (11 04), ML1439 (11 04), CG2838 (04 17), CG3359 (05 14), ML1217 (02 10), IL0021 (09 08), MI9101 (12 21), MI9046 (06 10), CG2951 (12 07), CG3370 (03 05), MI9098 (01 16), ML1561 (09 22)

*Omits applicable Forms and Endorsements if shown in specific Coverage Part/Coverage Form Declarations.

Countersigned at: Wayne, PA
Date: 3/21/2024

By 
Authorized Representative

INSURED



OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART

Policy No. 04OCP002007243

Effective Date: 3/22/2024 **
12:01 A.M., Standard Time

DESIGNATION OF CONTRACTOR				
Designation of Contractor and Mailing Address Fonson Company Inc 7644 Whitmore Lake Rd Brighton, MI 48116				
LOCATION OF COVERED OPERATIONS				
5 Mile Road & Ridge Road, Northville & Plymouth Township, MI, Contract #: 0657-21-0010 5 Mile and Ridge Road Redevelopment - Phase 1				
LIMITS OF INSURANCE				
Aggregate Limit			\$4,000,000	
Each Occurrence Limit			\$2,000,000	
BUSINESS DESCRIPTION				
Form of Business: Municipality Business Description*:				
PREMIUM				
Classification	Code No.	Premium Basis	Rate Per \$1,000 of Cost	Advance Premium
MICHIGAN Construction Operations - Owner (Not Railroads) - Excluding Operations On Board Ships	16292	\$10,951,703	0.885	\$9,692
Minimum Premium Balance to Equal Minimum Premium:				
All Other Policywriting	\$1,000		Total Advance Premium	\$9,692
FORMS AND ENDORSEMENTS (other than applicable Forms and Endorsements shown elsewhere in the policy)				
Forms and Endorsements applying to the Coverage Part and made part of this policy at time of issue:				

*Information omitted if shown elsewhere in the policy.

**Inclusion of date optional.

These declarations are part of the policy declarations containing the name of the insured and the policy period.

MID-CONTINENT ASSURANCE COMPANY
P. O. BOX 1409 TULSA, OK 74101

SUPPLEMENTARY DECLARATIONS FOR NAMED INSURED

POLICY NO.	04OCP002007243
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THE NAMED INSURED FOR THIS POLICY IS:

MITCRA - Michigan Internation Technology Corridor Redevelopment Authority

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE FORM – COVERAGE FOR OPERATIONS OF DESIGNATED CONTRACTOR

Various provisions of this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

Throughout this policy the words "you" and "your" refer to the Named Insured shown in the Declarations. The words "we", "us" and "our" refer to the company providing this insurance.

The word "insured" means any person or organization qualifying as such under Section II – Who Is An Insured.

Other words and phrases that appear in quotation marks have special meaning. Refer to Section V – Definitions.

SECTION I – COVERAGES

BODILY INJURY AND PROPERTY DAMAGE LIABILITY

1. Insuring Agreement

a. We will pay those sums that the insured becomes legally obligated to pay as damages because of "bodily injury" or "property damage" to which this insurance applies. We will have the right and duty to defend the insured against any "suit" seeking those damages. However, we will have no duty to defend the insured against any "suit" seeking damages for "bodily injury" or "property damage" to which this insurance does not apply. We may, at our discretion, investigate any "occurrence" and settle any claim or "suit" that may result. But:

- (1) The amount we will pay for damages is limited as described in Section III – Limits Of Insurance; and
- (2) Our right and duty to defend ends when we have used up the applicable limit of insurance in the payment of judgments or settlements.

No other obligation or liability to pay sums or perform acts or services is covered unless explicitly provided for under Supplementary Payments.

b. This insurance applies to "bodily injury" and "property damage" only if:

- (1) The "bodily injury" or "property damage" is caused by an "occurrence" and arises out of:

- (a) Operations performed for you by the "contractor" at the location specified in the Declarations; or
 - (b) Your acts or omissions in connection with the general supervision of such operations;
- (2) The "bodily injury" or "property damage" occurs during the policy period; and
 - (3) Prior to the policy period, no insured listed under Paragraph 1. of Section II – Who Is An Insured and no "employee" authorized by you to give or receive notice of an "occurrence" or claim, knew that the "bodily injury" or "property damage" had occurred, in whole or in part. If such a listed insured or authorized "employee" knew, prior to the policy period, that the "bodily injury" or "property damage" occurred, then any continuation, change or resumption of such "bodily injury" or "property damage" during or after the policy period will be deemed to have been known prior to the policy period.
- c. "Bodily injury" or "property damage" which occurs during the policy period and was not, prior to the policy period, known to have occurred by any insured listed under Paragraph 1. of Section II – Who Is An Insured or any "employee" authorized by you to give or receive notice of an "occurrence" or claim, includes any continuation, change or resumption of that "bodily injury" or "property damage" after the end of the policy period.
- d. "Bodily injury" or "property damage" will be deemed to have been known to have occurred at the earliest time when any insured listed under Paragraph 1. of Section II – Who Is An Insured or any "employee" authorized by you to give or receive notice of an "occurrence" or claim:
- (1) Reports all, or any part, of the "bodily injury" or "property damage" to us or any other insurer;
 - (2) Receives a written or verbal demand or claim for damages because of the "bodily injury" or "property damage"; or
 - (3) Becomes aware by any other means that "bodily injury" or "property damage" has occurred or has begun to occur.

- e. Damages because of "bodily injury" include damages claimed by any person or organization for care, loss of services or death resulting at any time from the "bodily injury".

2. Exclusions

This insurance does not apply to:

a. Expected Or Intended Injury

"Bodily injury" or "property damage" expected or intended from the standpoint of the insured. This exclusion does not apply to "bodily injury" resulting from the use of reasonable force to protect persons or property.

b. Contractual Liability

"Bodily injury" or "property damage" for which the insured is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages:

- (1) That the insured would have in the absence of the contract or agreement; or
- (2) Assumed in a contract or agreement that is an "insured contract", provided the "bodily injury" or "property damage" occurs subsequent to the execution of the contract or agreement. Solely for the purposes of liability assumed in an "insured contract", reasonable attorneys' fees and necessary litigation expenses incurred by or for a party other than an insured are deemed to be damages because of "bodily injury" or "property damage", provided:
 - (a) Liability to such party for, or for the cost of, that party's defense has also been assumed in the same "insured contract"; and
 - (b) Such attorneys' fees and litigation expenses are for defense of that party against a civil or alternative dispute resolution proceeding in which damages to which this insurance applies are alleged.

c. Work Completed Or Put To Intended Use

"Bodily injury" or "property damage" which occurs after the earlier of the following times:

- (1) When all "work" on the project (other than service, maintenance or repairs) to be performed for you by the "contractor" at the site of the covered operations has been completed; or

- (2) When that portion of the "contractor's" "work", out of which the injury or damage arises, has been put to its intended use by any person or organization, other than another contractor or subcontractor working directly or indirectly for the "contractor" or as part of the same project.

d. Acts Or Omissions By You And Your Employees

"Bodily injury" or "property damage" arising out of your, or your "employees", acts or omissions other than general supervision of "work" performed for you by the "contractor".

e. Workers' Compensation And Similar Laws

Any obligation of the insured under a workers' compensation, disability benefits or unemployment compensation law or any similar law.

f. Employer's Liability

"Bodily injury" to:

- (1) An "employee" of the insured arising out of and in the course of:
 - (a) Employment by the insured; or
 - (b) Performing duties related to the conduct of the insured's business; or
- (2) The spouse, child, parent, brother or sister of that "employee" as a consequence of Paragraph (1) above.

This exclusion applies whether the insured may be liable as an employer or in any other capacity and to any obligation to share damages with or repay someone else who must pay damages because of the injury.

This exclusion does not apply to liability assumed by the insured under an "insured contract".

g. Damage To Property

"Property damage" to:

- (1) Property you own, rent, or occupy, including any costs or expenses incurred by you, or any other person, organization or entity, for repair, replacement, enhancement, restoration or maintenance of such property for any reason, including prevention of injury to a person or damage to another's property;
- (2) Property loaned to you;
- (3) Personal property in the care, custody or control of the insured; or
- (4) "Work" performed for you by the "contractor".

h. War

"Bodily injury" or "property damage", however caused, arising, directly or indirectly, out of:

- (1) War, including undeclared or civil war;
- (2) Warlike action by a military force, including action in hindering or defending against an actual or expected attack, by any government, sovereign or other authority using military personnel or other agents; or
- (3) Insurrection, rebellion, revolution, usurped power, or action taken by governmental authority in hindering or defending against any of these.

i. Mobile Equipment

"Bodily injury" or "property damage" arising out of the use of "mobile equipment" in, or while in practice for, or while being prepared for, any prearranged racing, speed, demolition, or stunting activity.

j. Pollution

(1) "Bodily injury" or "property damage" arising out of the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of "pollutants":

(a) At or from any premises, site or location which is or was at any time owned or occupied by, or rented or loaned to, any insured. However, this subparagraph does not apply to:

(i) "Bodily injury" if sustained within a building and caused by smoke, fumes, vapor or soot produced by or originating from equipment that is used to heat, cool or dehumidify the building, or equipment that is used to heat water for personal use, by the building's occupants or their guests;

(ii) "Bodily injury" or "property damage" arising out of heat, smoke or fumes from a "hostile fire";

(b) At or from any premises, site or location which is or was at any time used by or for any insured or others for the handling, storage, disposal, processing or treatment of waste;

(c) Which are or were at any time transported, handled, stored, treated, disposed of, or processed as waste by or for:

(i) Any insured; or

(ii) Any person or organization for whom you may be legally responsible; or

(d) At or from any premises, site or location on which any insured or any contractors or subcontractors working directly or indirectly on any insured's behalf are performing operations if the "pollutants" are brought on or to the premises, site or location in connection with such operations by such insured, contractor or subcontractor. However, this subparagraph does not apply to:

(i) "Bodily injury" or "property damage" arising out of the escape of fuels, lubricants or other operating fluids which are needed to perform the normal electrical, hydraulic or mechanical functions necessary for the operation of "mobile equipment" or its parts, if such fuels, lubricants or other operating fluids escape from a vehicle part designed to hold, store or receive them. This exception does not apply if the "bodily injury" or "property damage" arises out of the intentional discharge, dispersal or release of the fuels, lubricants or other operating fluids, or if such fuels, lubricants or other operating fluids are brought on or to the premises, site or location with the intent that they be discharged, dispersed or released as part of the operations being performed by such insured, contractor or subcontractor;

(ii) "Bodily injury" or "property damage" sustained within a building and caused by the release of gases, fumes or vapors from materials brought into that building in connection with operations being performed by or on behalf of any insured; or

(iii) "Bodily injury" or "property damage" arising out of heat, smoke or fumes from a "hostile fire".

(e) At or from any premises, site or location on which any insured or any contractors or subcontractors working directly or indirectly on any insured's behalf are performing operations if the operations are to test for, monitor, clean up, remove, contain, treat, detoxify or neutralize, or in any way respond to, or assess the effects of "pollutants".

(2) Any loss, cost or expense arising out of any:

- (a) Request, demand, order or statutory or regulatory requirement that any insured or others test for, monitor, clean up, remove, contain, treat, detoxify or neutralize, or in any way respond to, or assess the effects of "pollutants"; or
- (b) Claim or suit by or on behalf of a governmental authority for damages because of testing for, monitoring, cleaning up, removing, containing, treating, detoxifying or neutralizing, or in any way responding to, or assessing the effects of "pollutants".

However, this paragraph does not apply to liability for damages because of "property damage" that the insured would have in the absence of such request, demand, order or statutory or regulatory requirement, or such claim or "suit" by or on behalf of a governmental authority.

k. Damage To Impaired Property Or Property Not Physically Injured

"Property damage" to "impaired property" or property that has not been physically injured, arising out of:

- (1) A defect, deficiency, inadequacy or dangerous condition in "work" performed for you by the "contractor"; or
- (2) A delay or failure by you or anyone acting on your behalf to perform a contract or agreement in accordance with its terms.

This exclusion does not apply to the loss of use of other property arising out of sudden and accidental physical injury to "work" performed for you by the "contractor".

l. Electronic Data

Damages arising out of the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate electronic data.

However, this exclusion does not apply to liability for damages because of "bodily injury".

As used in this exclusion, electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software, including systems and applications software, hard or floppy disks, CD-ROMs, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

SUPPLEMENTARY PAYMENTS

- 1. We will pay, with respect to any claim we investigate or settle, or any "suit" against an insured we defend:
 - a. All expenses we incur.

- b. Up to \$250 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which this insurance applies. We do not have to furnish these bonds.
- c. The cost of bonds to release attachments, but only for bond amounts within the applicable limit of insurance. We do not have to furnish these bonds.
- d. All reasonable expenses incurred by the insured at our request to assist us in the investigation or defense of the claim or "suit", including actual loss of earnings up to \$250 a day because of time off from work.
- e. All court costs taxed against the insured in the "suit". However, these payments do not include attorneys' fees or attorneys' expenses taxed against the insured.
- f. Prejudgment interest awarded against the insured on that part of the judgment we pay. If we make an offer to pay the applicable limit of insurance, we will not pay any prejudgment interest based on that period of time after the offer.
- g. All interest on the full amount of any judgment that accrues after entry of the judgment and before we have paid, offered to pay, or deposited in court the part of the judgment that is within the applicable limit of insurance.
- h. Expenses incurred by the insured for first aid administered to others at the time of an accident for "bodily injury" to which this insurance applies.

These payments will not reduce the limits of insurance.

- 2. If we defend an insured against a "suit" and an indemnitee of the insured is also named as a party to the "suit", we will defend that indemnitee if all of the following conditions are met:
 - a. The "suit" against the indemnitee seeks damages for which the insured has assumed the liability of the indemnitee in a contract or agreement that is an "insured contract";
 - b. This insurance applies to such liability assumed by the insured;
 - c. The obligation to defend, or the cost of the defense of, that indemnitee, has also been assumed by the insured in the same "insured contract";
 - d. The allegations in the "suit" and the information we know about the "occurrence" are such that no conflict appears to exist between the interests of the insured and the interests of the indemnitee;

e. The indemnitee and the insured ask us to conduct and control the defense of that indemnitee against such "suit" and agree that we can assign the same counsel to defend the insured and the indemnitee; and

f. The indemnitee:

(1) Agrees in writing to:

(a) Cooperate with us in the investigation, settlement or defense of the "suit";

(b) Immediately send us copies of any demands, notices, summonses or legal papers received in connection with the "suit";

(c) Notify any other insurer whose coverage is available to the indemnitee; and

(d) Cooperate with us with respect to coordinating other applicable insurance available to the indemnitee; and

(2) Provides us with written authorization to:

(a) Obtain records and other information related to the "suit"; and

(b) Conduct and control the defense of the indemnitee in such "suit".

So long as the above conditions are met, attorneys' fees incurred by us in the defense of that indemnitee, necessary litigation expenses incurred by us and necessary litigation expenses incurred by the indemnitee at our request will be paid as Supplementary Payments. Notwithstanding the provisions of Paragraph 2.b.(2) of Section I – Coverages – Bodily Injury And Property Damage Liability, such payments will not be deemed to be damages for "bodily injury" and "property damage" and will not reduce the limits of insurance.

Our obligation to defend an insured's indemnitee and to pay for attorneys' fees and necessary litigation expenses as Supplementary Payments ends when we have used up the applicable limit of insurance in the payment of judgments or settlements or the conditions set forth above, or the terms of the agreement described in Paragraph f. above, are no longer met.

SECTION II – WHO IS AN INSURED

1. If you are designated in the Declarations as:

a. An individual, you and your spouse are insureds.

b. A partnership or joint venture, you are an insured. Your members, your partners, and their spouses are also insureds, but only with respect to their duties as partners or members of a joint venture.

c. A limited liability company, you are an insured. Your members are also insureds, but only with respect to their duties as members of a limited liability company. Your managers are insureds, but only with respect to their duties as your managers.

d. An organization other than a partnership, joint venture or limited liability company, you are an insured. Your "executive officers" and directors are insureds, but only with respect to their duties as your officers or directors. Your stockholders are also insureds, but only with respect to their liability as stockholders.

2. Each of the following is also an insured:

a. Any person (other than your "employee") or any organization while acting as your real estate manager.

b. Any person or organization having proper temporary custody of your property if you die, but only:

(1) With respect to liability arising out of the maintenance or use of that property; and

(2) Until your legal representative has been appointed.

c. Your legal representative if you die, but only with respect to duties as such. That representative will have all your rights and duties under this Coverage Part.

No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

SECTION III – LIMITS OF INSURANCE

1. The Limits of Insurance shown in the Declarations and the rules below fix the most we will pay regardless of the number of:

a. Insureds;

b. Claims made or "suits" brought; or

c. Persons or organizations making claims or bringing "suits".

2. The Aggregate Limit is the most we will pay for the sum of damages because of all "bodily injury" and "property damage".

3. Subject to Paragraph 2. above, the Each Occurrence Limit is the most we will pay for the sum of damages because of all "bodily injury" and "property damage" arising out of any one "occurrence".

If you designate more than one project in the Declarations, the Aggregate Limit shall apply separately to each project.

The Limits of Insurance of this Coverage Part apply separately to each consecutive annual period and to any remaining period of less than 12 months, starting with the beginning of the policy period shown in the Declarations, unless the policy period is extended after issuance for an additional period of less than 12 months. In that case, the additional period will be deemed part of the last preceding period for purposes of determining the Limits of Insurance.

SECTION IV – CONDITIONS

1. Bankruptcy

Bankruptcy or insolvency of the insured or of the insured's estate will not relieve us of our obligations under this Coverage Part.

2. Cancellation

a. The first Named Insured shown in the Declarations may cancel this policy by mailing or delivering to us advance written notice of cancellation.

b. We may cancel this policy by mailing or delivering to the first Named Insured and the "contractor" written notice of cancellation at least:

(1) 10 days before the effective date of cancellation if we cancel for nonpayment of premium; or

(2) 30 days before the effective date of cancellation if we cancel for any other reason.

c. We will mail or deliver our notices to the first Named Insured's and the "contractor's" last mailing address known to us.

d. Notice of cancellation will state the effective date of cancellation. The policy period will end on that date.

e. If this policy is cancelled, we will send the "contractor" any premium refund due. If we cancel, the refund will be pro rata. If the first Named Insured cancels, the refund may be less than pro rata. The cancellation will be effective even if we have not made or offered a refund.

f. If notice is mailed, proof of mailing will be sufficient proof of notice.

3. Changes

This policy contains all the agreements between you, the "contractor" and us concerning the insurance afforded. The first Named Insured shown in the Declarations and the "contractor" are authorized to make changes in the terms of this policy with our consent. This policy's terms can be amended or waived only by endorsement issued by us and made a part of this policy.

4. Duties In The Event Of Occurrence, Claim Or Suit

a. You must see to it that we are notified as soon as practicable of an "occurrence" which may result in a claim. To the extent possible, notice should include:

(1) How, when and where the "occurrence" took place;

(2) The names and addresses of any injured persons and witnesses; and

(3) The nature and location of any injury or damage arising out of the "occurrence".

b. If a claim is made or "suit" is brought against any insured, you must:

(1) Immediately record the specifics of the claim or "suit" and the date received; and

(2) Notify us as soon as practicable.

You must see to it that we receive written notice of the claim or "suit" as soon as practicable.

c. You and any other involved insured must:

(1) Immediately send us copies of any demands, notices, summonses or legal papers received in connection with the claim or "suit";

(2) Authorize us to obtain records and other information;

(3) Cooperate with us in the investigation or settlement of the claim or defense against the "suit"; and

(4) Assist us, upon our request, in the enforcement of any right against any person or organization which may be liable to the insured because of injury or damage to which this insurance may also apply.

d. No insured will, except at that insured's own cost, voluntarily make a payment, assume any obligation, or incur any expense, other than for first aid, without our consent.

5. Examination Of Your Books And Records

We may examine and audit your books and records as well as the "contractor's" books and records as they relate to this policy at any time during the policy period and up to three years afterward.

6. Inspections And Surveys

a. We have the right to:

(1) Make inspections and surveys at any time;

(2) Give you reports on the conditions we find; and

(3) Recommend changes.

b. We are not obligated to make any inspections, surveys, reports or recommendations and any such actions we do undertake relate only to insurability and the premiums to be charged. We do not make safety inspections. We do not undertake to perform the duty of any person or organization to provide for the health or safety of workers or the public. And we do not warrant that conditions:

- (1) Are safe or healthful; or
- (2) Comply with laws, regulations, codes or standards.

c. Paragraphs a. and b. of this condition apply not only to us, but also to any rating, advisory, rate service or similar organization which makes insurance inspections, surveys, reports or recommendations.

d. Paragraph b. of this condition does not apply to any inspections, surveys, reports or recommendations we may make relative to certification, under state or municipal statutes, ordinances or regulations, of boilers, pressure vessels or elevators.

7. Legal Action Against Us

No person or organization has a right under this Coverage Part:

- a. To join us as a party or otherwise bring us into a "suit" asking for damages from an insured; or
- b. To sue us on this Coverage Part unless all of its terms have been fully complied with.

A person or organization may sue us to recover on an agreed settlement or on a final judgment against an insured; but we will not be liable for damages that are not payable under the terms of this Coverage Part or that are in excess of the applicable limit of insurance. An agreed settlement means a settlement and release of liability signed by us, the insured and the claimant or the claimant's legal representative.

8. Other Insurance

The insurance afforded by this Coverage Part is primary insurance and we will not seek contribution from any other insurance available to you unless the other insurance is provided by a contractor other than the designated "contractor" for the same operation and job location designated in the Declarations. Then we will share with that other insurance by the method described below.

If all of the other insurance permits contribution by equal shares, we will follow this method also. Under this approach, each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

9. Premiums

The "contractor":

- a. Is responsible for the payment of all premiums; and
- b. Will be the payee for any return premiums we pay.

10. Premium Audit

- a. We will compute all premiums for this Coverage Part in accordance with our rules and rates.
- b. Premium shown in this Coverage Part as advance premium is a deposit premium only. At the close of each audit period we will compute the earned premium for that period and send notice to the "contractor". The due date for audit and retrospective premiums is the date shown as the due date on the bill. If the sum of the advance and audit premiums paid for the policy period is greater than the earned premium, we will return the excess to the "contractor".
- c. The "contractor" must keep records of the information we need for premium computation, and send us copies at such times as we may request.

11. Separation Of Insureds

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned in this Coverage Part to the first Named Insured, this insurance applies:

- a. As if each Named Insured were the only Named Insured; and
- b. Separately to each insured against whom claim is made or "suit" is brought.

12. Transfer Of Rights Of Recovery Against Others To Us

If the insured has rights to recover all or part of any payment we have made under this Coverage Part those rights are transferred to us. The insured must do nothing after loss to impair them. At our request, the insured will bring "suit" or transfer those rights to us and help us enforce them.

13. When We Do Not Renew

If we decide not to renew this Coverage Part, we will mail or deliver to the first Named Insured shown in the Declarations written notice of the nonrenewal not less than 30 days before the expiration date.

If notice is mailed, proof of mailing will be sufficient proof of notice.

SECTION V – DEFINITIONS

1. "Auto" means:

- a. A land motor vehicle, trailer or semitrailer designed for travel on public roads, including any attached machinery or equipment; or
- b. Any other land vehicle that is subject to a compulsory or financial responsibility law or other motor vehicle insurance law where it is licensed or principally garaged.

However, "auto" does not include "mobile equipment".

2. "Bodily injury" means bodily injury, sickness or disease sustained by a person, including death resulting from any of these at any time.

3. "Contractor" means the contractor designated in the Declarations.

4. "Employee" includes a "leased worker". "Employee" does not include a "temporary worker".

5. "Executive officer" means a person holding any of the officer positions created by your charter, constitution, bylaws or any other similar governing document.

6. "Hostile fire" means one which becomes uncontrollable or breaks out from where it was intended to be.

7. "Impaired property" means tangible property, other than work performed for you, that cannot be used or is less useful because:

- a. It incorporates work performed for you that is known or thought to be defective, deficient, inadequate or dangerous; or
- b. You have failed to fulfill the terms of a contract or agreement;

if such property can be restored to use by the repair, replacement, adjustment or removal of the work performed for you or your fulfilling the terms of the contract or agreement.

8. "Insured contract" means:

- a. A lease of premises;
- b. A sidetrack agreement;
- c. Any easement or license agreement, except in connection with construction or demolition operations on or within 50 feet of a railroad;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality; or

e. An elevator maintenance agreement.

9. "Leased worker" means a person leased to you by a labor leasing firm under an agreement between you and the labor leasing firm, to perform duties related to the conduct of your business. "Leased worker" does not include a "temporary worker".

10. "Mobile equipment" means any of the following types of land vehicles, including any attached machinery or equipment:

a. Bulldozers, farm machinery, forklifts and other vehicles designed for use principally off public roads;

b. Vehicles maintained for use solely on or next to premises you own or rent;

c. Vehicles that travel on crawler treads;

d. Vehicles, whether self-propelled or not, maintained primarily to provide mobility to permanently mounted:

(1) Power cranes, shovels, loaders, diggers or drills; or

(2) Road construction or resurfacing equipment such as graders, scrapers or rollers;

e. Vehicles not described in Paragraph a., b., c. or d. above that are not self-propelled and are maintained primarily to provide mobility to permanently attached equipment of the following types:

(1) Air compressors, pumps and generators, including spraying, welding, building cleaning, geophysical exploration, lighting and well servicing equipment; or

(2) Cherry pickers and similar devices used to raise or lower workers;

f. Vehicles not described in Paragraph a., b., c. or d. above maintained primarily for purposes other than the transportation of persons or cargo.

However, self-propelled vehicles with the following types of permanently attached equipment are not "mobile equipment" but will be considered "autos":

(1) Equipment designed primarily for:

(a) Snow removal;

(b) Road maintenance, but not construction or resurfacing; or

(c) Street cleaning;

(2) Cherry pickers and similar devices mounted on automobile or truck chassis and used to raise or lower workers; and

- (3) Air compressors, pumps and generators, including spraying, welding, building cleaning, geophysical exploration, lighting and well servicing equipment.

However, "mobile equipment" does not include land vehicles that are subject to a compulsory or financial responsibility law or other motor vehicle insurance law where it is licensed or principally garaged. Land vehicles subject to a compulsory or financial responsibility law or other motor vehicle insurance law are considered "autos".

11. "Occurrence" means an accident, including continuous or repeated exposure to substantially the same general harmful conditions.
12. "Pollutants" mean any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.
13. "Property damage" means:
- a. Physical injury to tangible property, including all resulting loss of use of that property. All such loss of use shall be deemed to occur at the time of the physical injury that caused it; or
 - b. Loss of use of tangible property that is not physically injured. All such loss of use shall be deemed to occur at the time of the "occurrence" that caused it.

For the purposes of this insurance, electronic data is not tangible property.

As used in this definition, electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from, computer software, including systems and applications software, hard or floppy disks, CD-ROMs, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

14. "Suit" means a civil proceeding, brought in the United States of America (including its territories and possessions), Puerto Rico or Canada, in which damages because of "bodily injury" or "property damage" to which this insurance applies are alleged. "Suit" includes:
- a. An arbitration proceeding in which such damages are claimed and to which the insured must submit or does submit with our consent; or
 - b. Any other alternative dispute resolution proceeding in which such damages are claimed and to which the insured submits with our consent.
15. "Temporary worker" means a person who is furnished to you to substitute for a permanent "employee" on leave or to meet seasonal or short-term workload conditions.
16. "Work" includes materials, parts or equipment furnished in connection with the operations.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – ENGINEERS, ARCHITECTS OR SURVEYORS

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART

A. Section II – Who Is An Insured is amended to include as an additional insured any architect, engineer or surveyor engaged by you, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:

1. In connection with your premises; or
2. In the performance of your ongoing operations.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:

This insurance does not apply to "bodily injury" or "property damage" arising out of the rendering of or the failure to render any professional services by or for you, including:

1. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

2. Supervisory, inspection, architectural or engineering activities.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage" involved the rendering of or the failure to render any professional services by or for you.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE FORM

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):

Northfield Township and Plymouth Township, Wayne County, MI

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" caused in whole or in part, by an "occurrence" and arises out of:

(a) Operations performed for the person or organization(s) shown in the Schedule by the "contractor" at the location specified in the Declarations; or

(b) Acts or omissions in connection with the general supervision of such operations by the person or organization(s) shown in the Schedule;

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

EXCLUSION - ASBESTOS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM
OWNERS AND CONTRACTORS LIABILITY COVERAGE FORM
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE FORM
RAILROAD PROTECTIVE LIABILITY COVERAGE FORM

This insurance does not apply to "bodily injury", "property damage", or "personal and advertising injury" arising out of the actual or alleged presence or actual, alleged or threatened dispersal of asbestos, asbestos fibers or products containing asbestos, provided that the injury or damage is caused or contributed to by the hazardous properties of asbestos. This includes:

- a. Any supervision, instructions, recommendations, warnings or advise given or which should have been given in connection with the above; and
- b. Any obligation to share damages with or repay someone else who must pay damages because of such injury or damage.

All other conditions remain unchanged

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

EXCLUSION - LEAD

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM
OWNERS AND CONTRACTORS LIABILITY COVERAGE FORM
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE FORM

This insurance does not apply to "bodily injury," "property damage," or "personal and advertising injury" arising out of the actual or alleged presence or actual, alleged or threatened dispersal of lead, lead particles or products containing lead, provided that the injury or damage is caused or contributed to by the hazardous properties of lead.

This includes:

- a. Any supervision, instructions, recommendations, warnings or advice given or which should have been given in connection with the above; and
- b. Any obligation to share damages with or repay someone else who must pay damages because of such injury or damage.

All other conditions remain unchanged

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

MICHIGAN CHANGES

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART

- A. Paragraphs a., c., d. and e. of the Cancellation Condition (Section IV) are replaced by the following:**
- a. The first Named Insured shown in the Declarations may cancel this Policy by giving us or our authorized agent notice of cancellation.
 - c. We will mail or deliver our notices to the first Named Insured's and the "contractor's" last mailing addresses known to us or our authorized agent.
 - d. The time of surrender or the effective date and hour of cancellation stated in the notice shall become the end of the policy period.
 - e. If this Policy is cancelled, we will send the "contractor" any pro rata premium refund due. The minimum earned premium shall not be less than the pro rata premium for the expired time or \$25, whichever is greater. The cancellation will be effective even if we have not made or offered a refund.
- B. The paragraph relating to prejudgment interest in Supplementary Payments (Section I) is replaced by the following:**
- Prejudgment interest awarded against the insured on that part of the judgment we pay.
- C. With respect to Condition 4. Duties In The Event Of Occurrence, Claim Or Suit (Section IV):**
1. Notice given by or on behalf of the insured to our authorized agent, with particulars sufficient to identify the insured, shall be considered notice to us.
2. The last sentence of Paragraph 4.b. is deleted.
 3. The reference to Paragraph d. is amended to read Paragraph e.
 4. The following is added:
 - d. Failure to give any notice required by this condition within the time period specified shall not invalidate any claim made by you if it shall be shown not to have been reasonably possible to give notice within the prescribed time period and that notice was given as soon as was reasonably possible.
- D. The When We Do Not Renew Condition (Section IV) is replaced by the following:**
- When We Do Not Renew**
- If we decide not to renew this Coverage Part, we will mail or deliver to the first Named Insured's last mailing address known to us or our authorized agent written notice of the nonrenewal not less than 30 days before the expiration date.
- If notice is mailed, proof of mailing shall be sufficient proof of notice.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**EXCLUSION – ACCESS OR DISCLOSURE OF
CONFIDENTIAL OR PERSONAL INFORMATION AND
DATA-RELATED LIABILITY – LIMITED BODILY INJURY
EXCEPTION NOT INCLUDED**

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

Exclusion 2.I. of **Section I – Coverages – Bodily Injury And Property Damage Liability** is replaced by the following:

2. Exclusions

This insurance does not apply to:

I. Access Or Disclosure Of Confidential Or Personal Information And Data-related Liability

Damages arising out of:

- (1) Any access to or disclosure of any person's or organization's confidential or personal information, including patents, trade secrets, processing methods, customer lists, financial information, credit card information, health information or any other type of nonpublic information; or
- (2) The loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate electronic data.

This exclusion applies even if damages are claimed for notification costs, credit monitoring expenses, forensic expenses, public relations expenses or any other loss, cost or expense incurred by you or others arising out of that which is described in Paragraph (1) or (2) above.

As used in this exclusion, electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software, including systems and applications software, hard or floppy disks, CD-ROMs, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

FUNGUS, MILDEW AND MOLD EXCLUSION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
OWNERS AND CONTRACTORS LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTION LIABILITY COVERAGE PART

This insurance does not apply to:

1. "Bodily injury", "property damage", "personal and advertising injury" or "medical payments" arising out of, resulting from, caused by, contributed to, attributed to, or in any way related to any fungus, mildew, mold or resulting allergens;
2. Any costs or expenses associated, in any way, with the abatement, mitigation, remediation, containment, detoxification, neutralization, monitoring, removal, disposal or any obligation to investigate or assess the presence or effects of any fungus, mildew, mold or resulting allergens; or
3. Any obligation to share with or repay any person, organization or entity, related in any way to items **1** and **2**.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NUCLEAR ENERGY LIABILITY EXCLUSION ENDORSEMENT

(Broad Form)

This endorsement modifies insurance provided under the following:

COMMERCIAL AUTOMOBILE COVERAGE PART
COMMERCIAL GENERAL LIABILITY COVERAGE PART
FARM COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
MEDICAL PROFESSIONAL LIABILITY COVERAGE PART
OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY

1. The insurance does not apply:
 - A. Under any Liability Coverage, to "bodily injury" or "property damage":
 - (1) With respect to which an "insured" under the policy is also an insured under a nuclear energy liability policy issued by Nuclear Energy Liability Insurance Association, Mutual Atomic Energy Liability Underwriters, Nuclear Insurance Association of Canada or any of their successors, or would be an insured under any such policy but for its termination upon exhaustion of its limit of liability; or
 - (2) Resulting from the "hazardous properties" of "nuclear material" and with respect to which (a) any person or organization is required to maintain financial protection pursuant to the Atomic Energy Act of 1954, or any law amendatory thereof, or (b) the "insured" is, or had this policy not been issued would be, entitled to indemnity from the United States of America, or any agency thereof, under any agreement entered into by the United States of America, or any agency thereof, with any person or organization.
 - B. Under any Medical Payments coverage, to expenses incurred with respect to "bodily injury" resulting from the "hazardous properties" of "nuclear material" and arising out of the operation of a "nuclear facility" by any person or organization.
 - C. Under any Liability Coverage, to "bodily injury" or "property damage" resulting from "hazardous properties" of "nuclear material", if:
 - (1) The "nuclear material" (a) is at any "nuclear facility" owned by, or operated by or on behalf of, an "insured" or (b) has been discharged or dispersed therefrom;
 - (2) The "nuclear material" is contained in "spent fuel" or "waste" at any time possessed, handled, used, processed, stored, transported or disposed of, by or on behalf of an "insured"; or
 - (3) The "bodily injury" or "property damage" arises out of the furnishing by an "insured" of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any "nuclear facility", but if such facility is located within the United States of America, its territories or possessions or Canada, this exclusion (3) applies only to "property damage" to such "nuclear facility" and any property thereat.
2. As used in this endorsement:

"Hazardous properties" includes radioactive, toxic or explosive properties.

"Nuclear material" means "source material", "special nuclear material" or "by-product material".

"Source material", "special nuclear material", and "by-product material" have the meanings given them in the Atomic Energy Act of 1954 or in any law amendatory thereof.

"Spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in a "nuclear reactor".

"Waste" means any waste material **(a)** containing "by-product material" other than the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its "source material" content, and **(b)** resulting from the operation by any person or organization of any "nuclear facility" included under the first two paragraphs of the definition of "nuclear facility".

"Nuclear facility" means:

- (a)** Any "nuclear reactor";
- (b)** Any equipment or device designed or used for **(1)** separating the isotopes of uranium or plutonium, **(2)** processing or utilizing "spent fuel", or **(3)** handling, processing or packaging "waste";

(c) Any equipment or device used for the processing, fabricating or alloying of "special nuclear material" if at any time the total amount of such material in the custody of the "insured" at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235;

(d) Any structure, basin, excavation, premises or place prepared or used for the storage or disposal of "waste";

and includes the site on which any of the foregoing is located, all operations conducted on such site and all premises used for such operations.

"Nuclear reactor" means any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of fissionable material.

"Property damage" includes all forms of radioactive contamination of property.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

GLOBAL SANCTIONS ENDORSEMENT

Notwithstanding any other provision of this Policy, this insurance cannot provide coverage and the Insurer shall not be liable to pay any claim or provide any benefit under this Policy to the extent that the provision of such coverage or benefit, or the payment of such claim, would violate, conflict with, or expose the Insurer to any sanction, prohibition or restriction under United Nations resolutions or any applicable economic or financial sanctions or other trade laws or regulations, including, but not limited to, of the United States of America, European Union, United Kingdom, or Canada.

MID-CONTINENT GROUP®
PRIVACY NOTICE
AND
NOTICE OF INFORMATION PRACTICES

The member of Mid-Continent Group ("Mid-Continent," including those companies listed at the end of this Notice) respect your right to privacy.

We want you to know about our procedures for protecting your privacy and your rights and responsibilities regarding information we receive about you. We want you to understand how we gather information about you, how we protect it, and how you can help ensure its accuracy. Although we may provide this Notice as information to additional persons, the terms of this Notice apply to those individuals who inquire about or obtain insurance from Mid-Continent primarily for personal, family or household purposes, and certain group insurance plans. We will provide our customers with a copy of the most recent notice of our privacy policy at least annually and more often if we make any changes affecting their rights under our privacy policy. This Notice applies to current and former customers of Mid-Continent, but does not in any way imply or affect insurance coverage. You can find the online version of this Notice on our web site at www.mcq-ins.com.

Because Mid-Continent does not share your information outside of permitted exceptions, there is no need for you to take any action under this Notice. If we change our practices in the future, we will advise you and, if applicable, enable you to "opt-out" of certain sharing.

1. What kind of information is collected about you?

We get most of our information about you directly from you, such as your name, address, social security number, income level and certain other financial information, on insurance applications and other forms that you provide to us. While in some cases the information you provide to your insurance representative during the insurance application process gives us all the information we need to evaluate you or your property for insurance, there are instances when we may need additional information or may need to verify information you have given us. In those cases, we may obtain information from outside sources at our own expense.

It is common for an insurance company to ask an independent source to verify and supplement information given on an insurance application. There are many such independent companies, commonly called "consumer reporting agencies," which are in the business of providing independent information to insurance and other financial services companies. We will treat the information we receive about you from an independent reporting agency in accordance with the terms of this Notice. Upon our receipt of your written request sent to the address set forth in Section 5, we will inform you of the name and address of any agency we have used to prepare a report on you so that you can contact the agency.

Once you have been an insured customer of ours for a period of time, your record may contain information related to our experiences and transactions with you, such as insurance policy coverage, premiums and payment history, and any claims you make under your insurance policy. For example, information collected by a claims representative and any policy or fire report will be retained by us. Any information that we collect in connection with an insurance claim will be kept in accordance with this Notice.

Each company within Mid-Continent Group may disclose information about you to an affiliate regarding its transactions and experiences with you (such as your payment or claims history). We do not currently share other credit-related information, except as permitted or required by law.

Finally, we do use "cookies" when you interact with our web sites to make that experience easy and meaningful for you. When you visit our web site, our web server sends a cookie to your computer. A cookie is an electronically transmitted file that holds small pieces of information. When you navigate through our web site, your browser "requests" pages for you to view, and that request will include the information stored in the cookie we previously sent to your computer. This process is like an electronic "handshake" between our system and your computer; the information exchanged allows us to recognize your browser.

Cookies are used to collect and store only the following information: the visitor's domain name, the Internet address of the web site from which the visitor linked directly to our web site, the pages of our site that the visitor views and the length of time spent on each page, browser and operating system platform type, and the date and time the visitor accessed our site.

Cookies, as well as data taken from them, do not identify you personally. They merely recognize your browser. Unless you choose to identify yourself to us, either by responding to a promotional offer, buying a policy, or registering for an online service, you remain anonymous.

Session cookies exist only during an online session with Mid-Continent. Session cookies allow you to conduct transactions or requests on our web site. Without the session cookie information, we would not be able to complete your web transactions securely. Session cookies help us make sure you are who you say you are after you have logged in. We do not sell this or any other information about you to other web sites, merchants or financial institutions.

2. What do we do with information about you?

Information about you will be kept in our insurance policy records. We will refer to and use that information for purposes related to issuing and servicing insurance policies and settling claims. Generally, personal information about you in our records will not be disclosed by us to any external organization without your prior authorization. However, we may, as permitted by law, share information about you contained in our files with certain persons or organizations such as:

- your insurance representative,
- persons who represent you in a fiduciary capacity, including your attorney or trustee, or who have a legal interest in your insurance policy,
- adjusters, appraisers, auditors, investigators and attorneys,
- persons or organizations who need the information to perform a business, professional or insurance function for us,
- other insurance companies, agents or consumer reporting agencies as information is needed in connection with any insurance application, policy or claim involving you,
- medical professionals to inform you of a medical condition of which you may not be aware,
- persons or organizations that conduct research, including actuarial or underwriting studies, provided that no individual information may be identified in any research study report,
- persons or organizations that perform marketing services on our behalf or to other financial institutions with whom we have joint marketing agreements,
- our affiliated companies,
- to a court, state insurance department or other government agency pursuant to a summons, court order, search warrant, subpoena, or as otherwise required by law or regulation.

3. Who has access to your information?

Mid-Continent currently incorporates a system of passwords and other appropriate physical, electronic and procedural safeguards to protect against unauthorized access to potentially private information. We will educate our employees about the terms of this Notice and the importance of confidentiality and customer privacy. Employees who gain unauthorized access or who otherwise violate our privacy policy are subject to disciplinary action up to and including termination of employment. We plan to monitor and evaluate our information security program and available security software in light of relevant changes in technology to determine ways to increase protections to the security or integrity of our records and information.

4. How can you review recorded information about you?

Generally, you have the right to review and receive a copy of the recorded personal information about you contained in our files with respect to a particular policy number, except for certain legal and medical documents. You have the further rights to request that we correct any of this information. To exercise these rights, you must send to us a notarized request at the address set forth below stating your complete name, address, insurance policy number, daytime phone number, and a copy of your driver's license or other personal identification. If you believe any information is incorrect, we will investigate and correct it if we can substantiate the error. Even if we do not correct the information, you have the right to file with us a written statement of dispute which we will include in any future disclosure of the information.

5. How can you contact us?

If, after reading this, you have any questions about our privacy policy, please write to us at the following address:

MID-CONTINENT GROUP
1437 S. Boulder
Suite 200
Tulsa, OK 74119
Attn: Compliance Office - Privacy

Mid-Continent Casualty Company
Mid-Continent Assurance Company
Oklahoma Surety Company

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

EMPLOYMENT-RELATED PRACTICES EXCLUSION

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART

The following exclusion is added to Paragraph 2., **Exclusions of Coverages – Bodily Injury And Property Damage Liability (Section I – Coverages)**:

This insurance does not apply to:

"Bodily injury" to:

- (1) A person arising out of any:
- (a) Refusal to employ that person;
 - (b) Termination of that person's employment; or
 - (c) Employment-related practices, policies, acts or omissions, such as coercion, demotion, evaluation, reassignment, discipline, defamation, harassment, humiliation, discrimination or malicious prosecution directed at that person; or

- (2) The spouse, child, parent, brother or sister of that person as a consequence of "bodily injury" to that person at whom any of the employment-related practices described in Paragraphs (a), (b) or (c) above is directed.

This exclusion applies:

- (1) Whether the injury-causing event described in Paragraphs (a), (b) or (c) above occurs before employment, during employment or after employment of that person;
- (2) Whether the insured may be liable as an employer or in any other capacity; and
- (3) To any obligation to share damages with or repay someone else who must pay damages because of the injury.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

SILICA OR SILICA-RELATED DUST EXCLUSION

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

A. The following exclusion is added to Paragraph 2., **Exclusions of Section I – Coverages Bodily Injury And Property Damage Liability:**

2. Exclusions

This insurance does not apply to:

SILICA OR SILICA-RELATED DUST

- a. "Bodily injury" arising, in whole or in part, out of the actual, alleged, threatened or suspected inhalation of, or ingestion of, "silica" or "silica-related dust".
- b. "Property damage" arising, in whole or in part, out of the actual, alleged, threatened or suspected contact with, exposure to, existence of, or presence of, "silica" or "silica-related dust".

c. Any loss, cost or expense arising, in whole or in part, out of the abating, testing for, monitoring, cleaning up, removing, containing, treating, detoxifying, neutralizing, remediating or disposing of, or in any way responding to or assessing the effects of, "silica" or "silica-related dust", by any insured or by any other person or entity.

B. The following definitions are added to the **Definitions** Section:

1. "Silica" means silicon dioxide (occurring in crystalline, amorphous and impure forms), silica particles, silica dust or silica compounds.
2. "Silica-related dust" means a mixture or combination of silica and other dust or particles.



1437 S. BOULDER SUITE 200 TULSA OK 74119

IN WITNESS CLAUSE

In Witness Whereof, we have caused this Policy to be executed and attested, and, if required by state law, this Policy shall not be valid unless countersigned by our authorized representative.

Handwritten signature of the President in cursive script.

President

Handwritten signature of the Secretary in cursive script.

Secretary

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**EXCLUSION – PERFLUORINATED AND POLYFLUORINATED
SUBSTANCES (PFAS)**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART

The policy is amended as follows:

This insurance does not apply to claims seeking damages that in any way involve, in whole or in part, perfluorinated and polyfluorinated substances (PFAS) or any derivatives or related substances.



MID-CONTINENT GROUP

THANK YOU

On behalf of our entire team, thank you for choosing to protect the security of your business with an insurance policy from Mid-Continent Group. We take this responsibility seriously, and we're committed to providing you with exceptional service and peace of mind.

We strive to provide prompt, professional and personal attention. The trust and support of valued customers like you and the dedicated agents who represent our products is the foundation of our success. We welcome your suggestions and the opportunity to improve any aspect of our performance. We look forward to earning your business, year after year.

Warmest regards,

Barrett Leahy
President and Chief Operating Officer
Mid-Continent Group

PERFORMANCE BOND

CONTRACTOR (name and address):

Fonson Company, Inc.
7644 Whitmore Lake Road
Brighton, MA 48116

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

Westfield Insurance Company
P.O. Box 5001
Westfield Center, OH 44251-5001

OWNER (name and address):

Michigan International Technology Corridor Redevelopment Authority (MITCRA)
44405 Six Mile Road
Northville, MI 48168

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount: Ten Million Nine Hundred Fifty One Thousand Seven Hundred Two and 94/100---(\$10,951,702.94)--Dollars

Description: Five Mile Road and Ridge Road Reconstruction Phase 1

BOND

Bond Number: 364801M

Date (not earlier than the Effective Date of the Agreement of the Construction Contract): March 17, 2024

Amount: Ten Million Nine Hundred Fifty One Thousand Seven Hundred Two and 94/100---(\$10,951,702.94)--Dollars

Modifications to this Bond Form: None See Paragraph 16

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

CONTRACTOR AS PRINCIPAL

SURETY

Fonson Company, Inc. (seal)
Contractor's Name and Corporate Seal

Westfield Insurance Company (seal)
Surety's Name and Corporate Seal

By: [Signature]
Signature

By: [Signature]
Signature (attach power of attorney)

Kirk Cooley
Print Name

Theresa J Foley
Print Name

General Manager
Title

Attorney-In-Fact
Title

Attest: [Signature]
Signature

Attest: Ryan Foley
Signature

Project Manager
Title

Ryan Foley, Witness
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):

Fonson Company, Inc.
7644 Whitmore Lake Road
Brighton, MA 48116

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

Westfield Insurance Company
P.O. Box 5001
Westfield Center, OH 44251-5001

OWNER (name and address):

Michigan International Technology Corridor Redevelopment Authority (MITCRA)
44405 Six Mile Road
Northville, Michigan 48168

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount: Ten Million Nine Hundred Fifty One Thousand Seven Hundred Two and 94/100---(\$10,951,702.94)--Dollars

Description: Five Mile Road and Ridge Road Reconstruction Phase 1

BOND

Bond Number: 364801M

Date (not earlier than the Effective Date of the Agreement of the Construction Contract): March 17, 2024

Amount: Ten Million Nine Hundred Fifty One Thousand Seven Hundred Two and 94/100---(\$10,951,702.94)--Dollars

Modifications to this Bond Form: None See Paragraph 18

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

CONTRACTOR AS PRINCIPAL

SURETY

Fonson Company, Inc. _____ (seal)

Contractor's Name and Corporate Seal

Westfield Insurance Company _____ (seal)

Surety's Name and Corporate Seal

By: _____

Signature

By: _____

Signature (attach power of attorney)

Print Name

Theresa J Foley

Print Name

Title

Attorney-In-Fact

Attest: _____

Signature

Attest: _____

Signature

Title

Ryan Foley, Witness

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.

- the Surety (at the address described in Paragraph 13).
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
 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;
 - 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

KNOW ALL PERSONS BY THESE PRESENTS, That we, Fonson Company, Inc., as Principal, and Westfield Insurance Company, as Surety, are held and firmly bound unto the Michigan International Technology Corridor Redevelopment Authority (MITCRA), 44405 Six Mile Road, Northville, Michigan 48168, as Owner, in the sum of Ten Million Nine Hundred Fifty One Thousand Seven Hundred Two and 94/100---(\$10,951,702.94)---Dollars good and lawful money of the United States of America, to be paid to said Michigan International Technology Corridor Redevelopment Authority, its legal representatives and assigns for which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, and each and every one of them jointly and severally, firmly by these presents.

Sealed with our seals and dated this 17th day of March A.D. 20 24.

WHEREAS, the above named Principal has entered into a certain written Contract with the Michigan International Technology Corridor Redevelopment Authority dated this ____ day of _____ A.D. 20 _____, wherein the said Principal covenanted and agreed to follows, to-wit: TO CONSTRUCT THE WORK IN ACCORDANCE WITH THE SPECIFICATIONS, CONTRACT DOCUMENTS AND DRAWINGS TITLED: Five Mile Road and Ridge Road Reconstruction Phase 1.


NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that by and under said Contract, the above named Principal has agreed with the Charter Township of Northville that for a period of two years from date of payment of Final Estimate, to keep in good order and repair any defect in all work done under said Contract either by the Principal or his or her Subcontractors, or his or her material suppliers, that may develop during said period due to improper materials, defective equipment, workpersonship 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 parts or part of said work as may have been disturbed without consent or approval of the Principal after final acceptance of the work, and that whenever directed to do so by the OWNER by notice served in writing, either personally or by mail, on the Principal at 7644 Whitmore Lake Road, Brighton, MA 48116

OR _____ it's _____ legal representatives, or successors, or on the Surety at P.O. Box 5001, Westfield Center, OH 44251-5001 WILL PROCEED at once to make such repairs as directed by said OWNER; and in case of failure so to do within one week from the date of service 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 the OWNER is final and conclusive. If the said Principal for a period of two year(s) 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 which may have been disturbed without the consent or approval of said Principal after final acceptance of same, and shall whenever notice is given as hereinbefore specified, at once 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 as hereinbefore specified, and shall fully indemnify, defend and save harmless the said Owner and Orchard, Hiltz & McCliment, Inc. from all suits and actions for damages of every name and description brought or claimed against it for, or on account of, any injury or damage to person or property received or sustained by any 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 the Workers' Compensation Act, so-called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

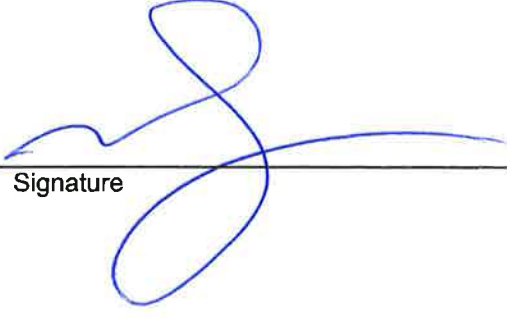
IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this 17th day of March A.D., 20 24.

Signed, Sealed and Delivered
In the Presence of:



Signature

Name Jannah Pawahneh



Signature

Name Kirk Cooney

Fonson Company, Inc.
Principal

Signature

Name Ryan Foley

Signature

Name Theresa J Foley, Attorney-in-Fact

Westfield Insurance Company
Surety

THIS POWER OF ATTORNEY SUPERCEDES ANY PREVIOUS POWER BEARING THIS SAME POWER # AND ISSUED PRIOR TO 06/30/22, FOR ANY PERSON OR PERSONS NAMED BELOW.

POWER NO. 2140082 03

General
Power
of Attorney

**Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.**
Westfield Center, Ohio

CERTIFIED COPY

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
JUDY K. WILSON, VICKI S. DUNCAN, KRISTIE A. PUDVAN, SUSAN E. HURD, NICHOLAS R. HYLANT, MICHAEL SCHATZ, KATHY S. ZACK, JENNIFER A. JAROSZ, JAMIE M. LAURENCELLE, SARAYU S. NAIR, THERESA J. FOLEY, JOINTLY OR SEVERALLY

of ANN ARBOR and State of MI its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship in any penal limit.

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.

and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"Be It Resolved, that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"Be it Further Resolved, that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their National Surety Leader and Senior Executive and their corporate seals to be hereto affixed this 30th day of JUNE A.D., 2022.

Corporate
Seals
Affixed



WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: Gary W. Stumper, National Surety Leader and Senior Executive

State of Ohio
County of Medina ss.:

On this 30th day of JUNE A.D., 2022, before me personally came Gary W. Stumper to me known, who, being by me duly sworn, did depose and say, that he resides in Medina, OH; that he is National Surety Leader and Senior Executive of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial
Seal
Affixed



David A. Kotnik, Attorney at Law, Notary Public
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio
County of Medina ss.:

I, Frank A. Carrino, Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 17th day of March A.D., 2024



Frank A. Carrino, Secretary

Contractor's Application for Payment No. _____

	Application Period:	Application Date:
To (Owner):	From (Contractor)	Via (Engineer)
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application for Payment

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

- | | | |
|--|----|-------|
| 1. ORIGINAL CONTRACT PRICE | \$ | _____ |
| 2. Net Change by Change Orders | \$ | _____ |
| 3. CURRENT CONTRACT PRICE (Line 1 + 2) | \$ | _____ |
| 4. TOTAL COMPLETED AND STORED TO DATE
(Column F on Progress Estimate) | \$ | _____ |
| 5. RETAINAGE: | | |
| a. _____% x \$ _____ Work Completed | \$ | _____ |
| b. _____% x \$ _____ Stored Material | \$ | _____ |
| c. Total Retainage (Line 5a + Line 5b) | \$ | _____ |
| 6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c) | \$ | _____ |
| 7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application) | \$ | _____ |
| 8. AMOUNT DUE THIS APPLICATION | \$ | _____ |
| 9. BALANCE TO FINISH, PLUS RETAINAGE
(Column G on Progress Estimate + Line 5 above) | \$ | _____ |

Contractor's Certification

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

Payment of:	\$	_____ (Line 8 or other - attach explanation of other amount)	
is recommended by:		_____ (Engineer)	_____ (Date)
Payment of:	\$	_____ (Line 8 or other - attach explanation of other amount)	
is approved by:		_____ (Owner)	_____ (Date)
Approved by:		_____ Funding Agency (if applicable)	_____ (Date)

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

Progress Estimate

Contractor's Application

For (contract):

Application Number:

Application Period:

Application Date:

A				B	C	D	E	F		G
Item		Bid Quantity	Unit Price	Bid Value	Estimated Quantity Installed	Value	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (E) / B	Balance to Finish (B - F)
Bid Item No.	Description									
TOTALS										

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	MITCRA	Owner's Contract No.:	
Contractor:	Fonson Company, Inc.	Contractor's Project No.:	
Engineer:	OHM Advisors	Engineer's Project No.:	0657-21-0010
Project:	Five Mile Road and Ridge Road Reconstruction Phase 1 Contract Name:		

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

- All Work The following specified portions of the Work:

Date of Substantial Completion

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

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

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

Amendments to Owner's responsibilities: None

As follows

Amendments to Contractor's responsibilities: None

As follows:

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

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

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

CONTRACTOR'S AFFIDAVIT

STATE OF MICHIGAN)

)SS.

COUNTY OF _____)

The undersigned, _____ (contractor name) hereby represents that on _____, 20____ he/ she/ it was awarded a Contract by the Michigan International Technology Center Redevelopment Authority (MITCRA) hereinafter called the OWNER, to reconstruct concrete and asphalt roads, place curb and gutter, aggregate shoulder, underdrain, install bioswales, reconstruct ditches, install signing, striping, and restoration along Five Mile Road from approximately 500 feet west of Ridge Road eastward to a location approximately 500 feet west of N Beck Road, and along Ridge Road from approximately 250 feet north of Five Mile Road to Halyard Drive in accordance with the terms and conditions of Contract No. 0657-21-0010; and the undersigned further represents that the subject work has now been accomplished and the said Contract has now been completed.

The undersigned hereby warrants and certifies that all of his/ her/ its indebtedness arising by reason of said Contract has been fully or satisfactorily secured, and that all claims from subcontractors and others for labor and material used in accomplishing the said project, as well as all other claims arising from performance of said Contract, have been fully paid or satisfactorily secured. The undersigned further agrees that if any such claim should hereafter arise, he/ she/ it shall assume responsibility for same immediately upon request to do so by the OWNER.

The undersigned, for a valuable consideration, receipt of which is hereby acknowledged, does further hereby waive, release and relinquish any and all claims or right of lien which the undersigned now has or may hereafter acquire upon the subject premises for labor and material used in accomplishing said project owned by the OWNER.

This affidavit is freely and voluntarily given with full knowledge of the facts on this _____ day of _____, 20_____ .

(Contractor)

By: _____

Title _____

Subscribed and sworn to before me, a Notary Public in and for _____ County, MI, on this _____ day of _____, 20_____ .

Notary Public:

My Commission expires: _____

CONTRACTOR'S DECLARATION

I HEREBY DECLARE THAT I HAVE NOT, during the period

_____ to

_____ A.D., 20 _____ performed any work, furnished any material, sustained any loss, damage or delay for any reason, including soil conditions encountered or created, or otherwise done anything for which I shall ask, demand, sue for or claim compensation from the Michigan International Technology Center Redevelopment Authority (MITCRA) or its agents, in addition to the regular items set forth in the Contract numbered 0657-21-0010 and dated _____ A.D., 20 ____ for the Agreement executed between myself and the OWNER, and in the Change Orders for work issued by the OWNER in writing as provided thereunder, except as I hereby make claim for additional compensation and/or extension of time, as set forth on the itemized statement attached hereto.

There (is) (is not) an itemized statement attached.

Date: _____

By: _____

Title: _____

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

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1801 Alexander Bell Drive, Reston, VA 20191-4400
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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

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

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and

submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

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

result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

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

1.02 *Terminology*

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

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

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

2.02 Copies of Documents

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

2.03 Before Starting Construction

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

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
2. a preliminary Schedule of Submittals; and
3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Initial Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

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

- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

3.02 *Reference Standards*

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

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

B. *Resolving Discrepancies:*

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

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract

Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

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

3.05 *Reuse of Documents*

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or

requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

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

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. abnormal weather conditions;
 - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 - 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility

that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise;

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

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

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

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

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

D. *Possible Price and Times Adjustments:*

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

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

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

5.05 *Underground Facilities*

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

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

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

5.06 *Hazardous Environmental Conditions at Site*

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

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

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

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

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

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or

authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

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

6.03 Contractor's Insurance

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

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

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

6.04 *Owner's Liability Insurance*

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

6.05 *Property Insurance*

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

under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

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

provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

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

6.06 *Waiver of Rights*

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

payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

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

6.07 *Receipt and Application of Property Insurance Proceeds*

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

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

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

7.02 *Labor; Working Hours*

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

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

7.03 *Services, Materials, and Equipment*

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

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

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

7.05 *Substitutes*

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

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

- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

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

- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

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

identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

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

7.08 *Permits*

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

7.09 *Taxes*

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

7.10 *Laws and Regulations*

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

resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

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

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone

employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

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

7.13 *Safety Representative*

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

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
1. *Shop Drawings:*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.
 2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

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

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal;
 - 6. the issuance of a notice of acceptability by Engineer;
 - 7. any inspection, test, or approval by others; or
 - 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

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

limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner

may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

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

8.02 *Coordination*

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

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal

seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

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

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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

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

9.06 *Insurance*

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

9.07 *Change Orders*

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

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

10.03 *Project Representative*

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

10.04 *Rejecting Defective Work*

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

10.05 *Shop Drawings, Change Orders and Payments*

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

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

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

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

11.01 *Amending and Supplementing Contract Documents*

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

1. *Change Orders:*

- a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
- b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

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

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change

involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

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

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and

11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

- d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

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

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

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

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction,

the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

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

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

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

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

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

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

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

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

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.

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

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

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

14.07 *Owner May Correct Defective Work*

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

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

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for

Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

- c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner:*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction

imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

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

may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

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

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

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

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

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer

(less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

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

15.08 *Correction Period*

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

respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

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

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

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

16.03 *Owner May Terminate For Convenience*

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

16.04 *Contractor May Stop Work or Terminate*

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

Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

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

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of

them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

SECTION 00 73 00 – SUPPLEMENTARY GENERAL CONDITIONS

These Supplementary General Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which 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 General Conditions is the same as the address system in the General Conditions; with the prefix “SC” added thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC 1.01 Defined Terms

Delete the period at the end of paragraph 1.01.A and add the following language:

; except where the terms “Architect,” “Engineer,” and “Contractor” are preceded by an adjective, the term shall then be understood to refer to the entity described by the combination of the two words.

SC-1.01.A.8 Change Order

Add the following language at the end of the last sentence of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC C-941. Agency approval is required before Change Orders are effective.

SC-1.01.A.40 Substantial Completion

Add the following paragraph immediately after Paragraph 1.01.A.44:

Substantial Completion shall specifically include the following items; unless identified otherwise in Section 01 10 00 “Summary.”

- a. All pavement construction, shoulder, curb and gutter, stormwater infrastructure, signing, and pavement markings are installed to specifications and ready for service.

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

The term “Work Change Directive” shall be understood to refer to a “Work Order”. A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

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

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

- 50. Architect – The individual or entity named as Architect or Engineer in the Agreement
- 51. General Contractor – The Contractor as defined in Paragraph 1.01.A.16.
- 52. Manufacturer – An individual or entity that manufactures, assembles or fabricates products.
- 53. Products – Systems, materials, manufactured units, equipment, components and accessories used in the Work.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01 Delivery of Bonds and Evidence of Insurance

SC 2.01 A Bonds

Add the following language at the end of the last sentence of Paragraph 2.01.A:

Contractor shall not start any work at the Site prior to Contractor delivering the required certificates and other evidence of insurance.

SC-2.01 B Evidence of Contractor's Insurance

Add the following language at the end of the last sentence of Paragraph 2.01.B:

B. Facsimile, telegraphic, oral or other electronically transmitted Bond will not be considered. Attorneys-in-fact who execute the Bonds on behalf of the Surety shall affix to each Bond a certified and current copy of the power of attorney.

SC-2.01 C Evidence of Owner's Insurance

Add the following language at the end of the last sentence of Paragraph 2.01.C:

Contractor shall not start any work at the Site prior to Owner delivering the required certificates and other evidence of insurance.

SC-2.02 Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following in its place:

Engineer (Acting as Owner's agent) shall furnish to Contractor one set of Drawings and Project Manual in electronic portable document format. Hard copies will be furnished upon request at the cost of preparation, reproduction and shipping.

SC-2.03 A Preliminary Schedules

Add the following language at the end of the last sentence of Paragraph 2.03.A.1:

; identifying the critical path for completing the Work, and identifying when all Subcontractors will be utilized, and taking into consideration any limitations on Working Hours;

SC-2.03 A Delete Paragraph 2.03.A.3 in its entirety and insert the following in its place:

a preliminary schedule of values for all of the Work, subdivided into component parts in sufficient detail to serve as the basis for progress payments during construction. The schedule of values shall be broken out by trade and split between materials and labor.

Prices shall include an appropriate amount of overhead and profit applicable to each item of Work.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.03 Reference Points

Add the following paragraph immediately after paragraph 4.03.A:

During the progress of the work, the Contractor may encounter section line, fractional section line, and property controlling corner monuments. Insofar as is known, such public land survey corners and property monuments have been indicated on the plans. The Contractor shall be responsible for complying with the requirements of Michigan Public Act 34. Specifically, she/ he/ it shall be responsible for notifying the county surveyor before removing a public land survey corner monument for construction activities. In addition, if construction time constraints will result in the public land survey corner monument being removed for more than one year, then the Contractor shall arrange to have a temporary corner monument set until the permanent one can be re-established. The costs of removing and replacing public land survey corner monuments, as well as setting temporary corner monuments shall be the responsibility of the Contractor unless pay items are provided in the bid form for these tasks. The Contractor shall not remove any such monument until the Engineer has witness points as reference for resetting of such monuments. After referencing has been done and suitable permanent sketches prepared, the Engineer will give permission to the Contractor for removal of the monument. Monuments and monument boxes shall be reset only after all backfilling has fully settled.

The Contractor shall protect and preserve all monument points, property corners, grade stakes, line, and reference points. Where stakes and markers are disturbed or removed due to operations under this Contract, the Contractor shall be charged at invoice cost by the Engineer for replacing the points. Care shall be exercised by the Contractor when operating near the markers, as any carelessness in operations will also cause a time delay to the schedule due to additional stakeout time required to replace reference points, lines, etc.

The Contractor shall accurately locate the work from reference points established by the Engineer along the surface of the ground and line of work.

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

SC-5.01 Availability of Lands

Add the following new paragraph immediately after paragraph 5.01A:

Prior to the start of construction, the Contractor shall verify with the Owner that any required easements have been obtained.

The Contractor shall keep his/ her/ its work operations within these easements and shall be responsible for complying with any easement conditions that are shown on the plans or stated in the Contract documents.

SC-5.02 Use of Site and Other Areas

Add the following paragraph immediately after paragraph 5.02.A:

The Contractor's operations in public streets or alleys shall be confined to as small a space as practicable, so as not to cause undue inconvenience to the public or abutting properties, and shall be subject to the approval of the Engineer.

Where the Contractor wishes to work on or stockpile materials on nearby properties, it will be her/ his/ its responsibility to contact the property owner for permission. Upon request, the Contractor shall provide a copy of written permission from any affected property owner. The Owner will not become involved with any such agreements and will not be held responsible for any damages that the Contractor may cause to private property. The Contractor shall not be compensated for restoration of private properties and stockpile areas unless said areas were within the original project limits.

SC-5.04 Differing Subsurface or Physical Conditions
Add the following paragraph 5 to 5.04.A:

5. If a public line and/or customer service line is damaged by Contractor, Contractor shall give verbal notice within one (1) hour and written notice within 24 hours to the Owner and Engineer.

ARTICLE 6 – BONDS AND INSURANCE

SC- 6.02	<u>Insurance – General Provisions</u>
SC- 6.03	<u>Contractor's Insurance</u>
SC- 6.04	<u>Owner's Liability Insurance</u>
SC- 6.05	<u>Property Insurance</u>
SC- 6.06	<u>Waiver of Rights</u>
SC- 6.07	<u>Receipt and Application of Property Insurance Proceeds</u>

Replace sections 6.02 thru 6.07 with the following:

1. LIABILITY OF CONTRACTOR

The Contractor shall take all responsibility for the work and shall provide barricades, watchpersons and lights, and take all precautions for preventing injuries to persons and property on or about the work; shall bear all losses resulting to her/ him/ it on account of the amount or character of the work or because the nature of the ground in which the work is done is different from what was estimated or expected, or on account of weather, floods, elements or other cause; and shall assume defense of, indemnify and save harmless the party of the first part and its individual officers and agents from all claims relating to labor, equipment and materials furnished for the work, inventions, patents and patent rights used in doing the work, also to injuries to any person or property received or sustained by or from the CONTRACTOR, her/ his/ its agents or employees.

The mention of any specific duty or liability of the CONTRACTOR in any part of the specifications shall not be construed as a limitation or restriction upon any general liability or duty imposed upon the CONTRACTOR by the specifications.

INDEMNIFICATION - HOLD HARMLESS AGREEMENT

The CONTRACTOR agrees to indemnify, defend, and save harmless the OWNER and ENGINEER, their consultants, agents, and employees, from and against all loss or expense (including costs and attorney's fees) by reason of liability imposed by law upon the OWNER and ENGINEER, their consultants, agents, and employees for damages to property and for damages because of bodily injury, including death at any time resulting therefrom, arising out of or in consequence of the performance of this work, whether such injuries to persons or damage to property is due, or claimed to be due, to the negligence of the CONTRACTOR, his/ her/ its subcontractors, the OWNER, the ENGINEER, and their consultants, agents, and employees, except only such injury or damage as shall have been occasioned by the sole negligence of the OWNER, the ENGINEER, and their agents and/or consultants.

COMPOSITION OF THE CONTRACTOR

If the CONTRACTOR hereunder is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

2. INSURANCE

2.1. Insurance Required of the CONTRACTOR:

Prior to commencement of work, the CONTRACTOR shall purchase and maintain during the term of the project such insurance as will protect him/ her/ it, the OWNER(s), and Orchard, Hiltz & McCliment, Inc., Consulting Engineers, from claims arising out of the work described in this Contract and performed by the CONTRACTOR, subcontractor(s) or sub-subcontractor(s) consisting of:

- 2.1.1. Workers' Compensation Insurance including Employer's Liability to cover employee injuries or disease compensable under the Workers' Compensation Statutes of the states in which work is conducted under this Contract; disability benefit laws, if any; or Federal compensation acts such as U.S. Longshore or Harbor Workers', Maritime Employment, or Railroad Compensation Act(s), if applicable. Self-insurance plans approved by the regulatory authorities in the state in which work on this project is performed are acceptable.
- 2.1.2. A Comprehensive General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property including loss of use thereof, including the following exposures:
 - a. All premises and operations.
 - b. Explosion, collapse, and underground damage.
 - c. Contractor's Protective coverage for independent contractors or subcontractors employed by her/ him/ it.
 - d. Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found under Part I of this Section.
 - e. The usual Personal Injury Liability endorsement with no exclusions pertaining to employment.
 - f. Products and Completed Operations coverage. This coverage shall extend through the contract guarantee period.
- 2.1.3. A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned and hired vehicles. In light of the standard policy provisions concerning (a) loading and unloading, and b) definitions pertaining to motor vehicles licensed for road use vs. unlicensed or self-propelled construction equipment, it is strongly recommended that Comprehensive General Liability and Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.
- 2.1.4. CONTRACTOR will purchase for the OWNER an Owner's Protective Liability policy to protect the OWNER; the ENGINEER (Orchard, Hiltz & McCliment, Inc.); their consultants, agents, employees and such public corporations in whose jurisdiction the work is located for their contingent liability for work performed by the CONTRACTOR, the subcontractor(s) or the sub-subcontractor(s) under this Contract.

2.1.5. CONTRACTOR shall purchase a Builder's Risk-Installation Floater in a form acceptable to the OWNER covering property of the project for the full cost of replacement as of the time of any loss which shall include, as named insureds, (a) the CONTRACTOR, (b) all subcontractors, (c) all sub-subcontractors, (d) the OWNER, and Orchard, Hiltz & McCliment, Inc., Consulting Engineers, as their respective interests may prove to be at the time of loss, covering insurable property which is the subject of this Contract, whether in place, stored at the job site, stored elsewhere, or in transit at the risk of the insured(s). Coverage shall be effected on an "All Risk" form, including but not limited to the perils of fire, wind, collapse, vandalism, theft and earthquake, with exclusions normal to the cover. The CONTRACTOR may arrange for such deductibles as he/ she/ it deems to be within his/ her/ its ability to self-assume, but he/ she/ it will be held solely responsible for the amount of such deductible and for any co-insurance penalties. Any insured loss shall be adjusted with the OWNER and CONTRACTOR and paid to the OWNER and CONTRACTOR as Trustee for the other insureds.

2.1.6. Umbrella or Excess Liability

The OWNER or its representative may, for certain projects, require limits higher than those stated in paragraph. 2.2 that follows. CONTRACTOR is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy(ies) and shall apply both to the CONTRACTOR's general liability and to her/ his/ its automobile liability insurance.

2.1.7. Railroad Protective Liability

Where such an exposure exists, the CONTRACTOR will provide coverage in the use of each railroad company having jurisdiction over rights-of-way across which work under the Contract is to be performed. The form of policy and limits of liability shall be determined by the railroad company(ies) involved.

2.2. Limits of Liability

The required limits of liability for insurance coverages requested in Section 2.1 shall be not less than the following:

2.2.1. Worker's Compensation

Coverage A

Compensation	Statutory
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Coverage B

Employer's Liability	\$500,000
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2.2.2. Comprehensive General Liability

Each Occurrence	\$1,000,000
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Aggregate	\$1,000,000
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Products & Completed Operations

Aggregate	\$1,000,000
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2.2.3. Comprehensive Automobile Liability

Combined Single Limit	\$1,000,000
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2.2.4. Owner's Protective

Each Occurrence	\$2,000,000
Aggregate	\$2,000,000

2.2.5. Builder's Risk-Installation Floater Cost to replace at time of loss

2.2.6. Umbrella or Excess Liability \$3,000,000

2.3. Insurance - Other Requirements

2.3.1. Notice of Cancellation or Intent Not to Renew

Policies will be endorsed to provide that at least thirty (30) days written notice shall be given to the OWNER and the ENGINEER of cancellation or of intent not to renew.

2.3.2. Evidence of Coverage

Prior to the commencement of work, the CONTRACTOR shall furnish to the OWNER, Certificates of Insurance in force on the Owner's Form of Certificate provided. Other forms of certificate are acceptable only if (1) they include all items prescribed in the Owner's Form of Certificate, including agreement to cancellation provisions outlined in Paragraph 2.3.1 above, and (2) they have the written approval of the OWNER and ENGINEER. The OWNER reserves the right to request complete copies of the policies if deemed necessary to ascertain details of coverage not provided by the certificates. Such policy copies shall be "Originally Signed Copies," and so designated.

A. Insurance Required for the CONTRACTOR

i. Workers' Compensation and Employers' Liability Comprehensive General Liability, including:

- a. All premises and operations.
- b. Explosion, collapse, and underground damage.
- c. Contractors' Protective.
- d. Contractual Liability for obligations assumed in the Indemnification-Hold Harmless agreement of this contract.
- e. Personal Injury Liability.
- f. Products and Completed Operations.

ii. Comprehensive Automobile Liability, including owned, non-owned, and hired vehicles.

iii. Umbrella or Excess Liability.

B. Insurance Required for the OWNER

Owners' Protective Liability which names as insured(s) the OWNER; the ENGINEER, Orchard, Hiltz & McCliment, Inc.; their consultants, agents, employees; and such public corporations in whose jurisdiction the work is located.

C. Insurance Required for the CONTRACTOR and the OWNER

Builders Risk-Installation Floater which names as insured(s) the OWNER; the ENGINEER, Orchard, Hiltz & McCliment, Inc.; their consultants, agents and employees; the CONTRACTOR; and all subcontractors.

2.3.3. The following must be endorsed on the policy as additionally named insured. An endorsement document must be provided to the Engineer and Owner.

- A. Michigan International Technology Center Redevelopment Authority
- B. Charter Township of Northville
- C. OHM Advisors

2.3.4. Qualification of Insurers

To determine the financial strength and reputation of insurance carriers, all companies providing coverages required shall be licensed or approved by the Office of Financial and Insurance Services of the State of Michigan. The company shall also have a financial rating not lower than X and a policyholder's service rating no lower than A as listed in A.M. Best's Key Rating Guide, current edition. Companies with ratings lower than A:X will be acceptable only upon the written consent of the Owner.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.06 Concerning Subcontractors, Suppliers and Others
Add the following subsection P:

- P. Contractor shall pay each Subcontractor under this Contract for satisfactory performance of its contract no later than ten (10) Calendar Days from the Contractor's receipt of payment from Owner. Contractor shall return retainage payments to each Subcontractor within 10 Calendar Days after the Subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval from Owner.

SC-7.08 Permits
Add the following language at the end of paragraph 7.08.A:

Additional provisions regarding permits and licenses are included in the General Requirements.

SC-7.08 Permits
Add the following paragraph immediately following paragraph 7.08.A:

- B. The Contractor is responsible for obtaining all permits, including making all arrangements for inspection and payment of all governmental charges and inspection fees necessary for the commencement of Work as indicated by the following. Owner will assist with permit coordination when necessary; however, will not be responsible for any charges unless indicated below.
 - 1. Wayne County Department of Public Services Right-of-Way permit
 - a. For construction activities within the county rights-of-way
 - b. Owner applied for permit. Contractor to obtain permit and pay all permit and inspection fees, and provide surety and insurance as required by Wayne County. All costs associated with obtaining the permit shall be included in the Reimbursed Permit Fees pay item.
 - 2. Michigan Department of Environment, Great Lakes, and Energy Joint Permit
 - a. For construction activities within wetlands, floodplains, or crossing inland lakes or streams.
 - b. Owner applied for permit. Owner to obtain permit and pay permit fees as required by Michigan Department of Environment, Great Lakes, and Energy.
 - c. Construction work impacting wetlands, floodplains and streams cannot begin until Joint Permit is obtained.

3. CSX Transportation Utility Permit
 - a. For construction within CSX rights-of-way.
 - b. All costs associated with CSX inspection and flagging fees shall be included in the Railroad Inspection and Flagging pay item. Contractor to provide surety and insurance as required by CSX Transportation. All costs associated with the additional surety and insurance shall be included in the Reimbursed Permit Fees pay item.
 - c. Construction work within CSX right-of-way cannot begin until CSX permit is obtained.

4. National Pollutant Discharge Elimination System (NPDES) Permit
 - a. For construction activities that discharge pollutants through a point source into a water of the United States.
 - b. Owner will apply for permit. Contractor to obtain permit. There is no fee associated with acquiring the issued permit.
 - c. Construction work that results in discharging to waters of the United States may not begin until NPDES permit is obtained.

SC-7.10 Laws and Regulations
Delete the last sentence of paragraph 7.10 B.

SC-7.13 Safety Representative
Add the following language to the end of paragraph 7.13 A:

At a minimum, the safety representative will be certified in personal protective equipment, hazard communication, demolition and blasting, excavation, hand and power tools, welding and cutting, cranes, derricks, hoists, conveyors, scaffolding, confined space, CPR and first aid.

Add the following subsection B:

- B. In the event there is an accident involving injury to any individual or damage to any property on or near the Work, Contractor shall provide to Owner and Engineer verbal notification within one hour and written notification within twenty-four hours of the event and shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining medical reports, police accident reports and other documentation that describes the event. Copies of such documentation shall be provided to Owner and Engineer, within forty-eight hours of the event.

SC-7.17 Contractor's General Warranty and Guarantee
Add the following new paragraph immediately after Paragraph 7.17.A:

The Contractor, as a condition precedent to final payment, shall execute a guarantee to the Owner warranting for a period of two (2) years from date of final payment to keep in good order and repair any defect in all the work done under the Agreement, either by the Contractor, her/ his/ its subcontractors, or material suppliers, that may develop during said period due to improper materials, defective equipment, improper materials workpersonship, or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and Contractor shall execute, in favor of the Owner the attached Maintenance and Guarantee Bond. When specifications call for a guarantee period greater than one (1) year, Contractor shall provide such longer guarantee period.

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

- SC-11.04 Change of Contract Price
Amend paragraphs 11.04.B.2 and 11.04.B.3 by adding the following words after the term “lump sum”: “or unit price”
- SC-11.07 Execution of Change Orders
Add the following new paragraph 5 after 11.07 A.4:
5. upon receipt of a change order, Contractor shall promptly proceed with the change in the Work involved.

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

- SC-13.02 Allowances
Add the following paragraph immediately after paragraph 13.02.C:
2. Contractor’s overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum.
- SC-13.03 Unit Price Work
Delete paragraph 13.03.E.1 in its entirety and insert the following in its place:
1. the total cost of a particular item of Unit Price Work amounts to 10% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Agreement; and

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

- SC-15.01. Progress Payments
Add the following paragraph immediately after paragraph 15.01.B.3:
4. Contractor shall indicate on the Application for Payment the amounts which are due to Owner from Contractor in accordance with the Contract Documents and which amounts Owner may deduct from the progress payment
- SC-15.01.D.1 Payment Becomes Due
Delete paragraph and replace with the following:
Thirty days after presentation of the Application for Payment to Owner with Engineer’s recommendation, the amount recommended will (subject to the provisions of Paragraph 15.01.E) become due, and when due will be paid by Owner to Contractor.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

- SC-16.04 Contractor May Stop Work or Terminate
Delete the phrase “Owner fails for 30 days to pay Contractor any sum finally determined to be due”, and replace with “Owner fails for 60 days to pay Contractor any sum finally determined to be due.”

ARTICLE 18 – MISCELLANEOUS

SC-18.09 Add new subsection 18.09:

SC-18.09 – Owner’s Right to Audit:

- A. Records means all records generated by or on behalf of Contractor and each Subcontractor and Supplier of Contractor, whether paper, electronic, or other media, which are in any way related to performance of or compliance with this Contract, including, without limitation: accounting records; written policies and procedures; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates and estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); back charge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends; lump sum agreements between Contractor and any Subcontractor or Supplier; records necessary to evaluate: Contract compliance, Change Order pricing, and any Claim submitted by Contractor or any of its payees; and any other Contractor record that may substantiate any charge related to this Contract.
- B. Contractor shall allow Owner’s agent or its authorized representative to inspect, audit, or reproduce, or all three, all Records generated by or on behalf of Contractor and each Subcontractor and Supplier, upon Owner’s written request. Further, Contractor shall allow Owner’s agent or authorized representative to interview any of Contractor’s employees, all Subcontractors and all Suppliers, and all their respective employees.
- C. Contractor shall retain all its Records, and require all its Subcontractors and Suppliers to retain their respective Records, during this Contract and for three years after final payment, until all audit and litigation matters that Owner has brought to the attention of Contractor are resolved, or longer if required by law, whichever is longer. Owner’s right to inspect, audit, or reproduce Records, or interview employees of Contractor or its respective Subcontractors or Suppliers exists during this Contract, and for three years after final payment, until all audit and litigation matters that Owner has brought to Contractor’s attention are resolved, or longer if required by law, whichever is longer, and at no cost to Owner, either from Contractor or any of its Subcontractors or Suppliers that may furnish Records or make employees available for interviewing.
- D. Contractor must provide sufficient and accessible facilities during its normal business hours for Owner to inspect, audit, or reproduce Records, or all three, and to interview any person about the Records.
- E. Contractor shall insert these requirements in each written contract between Contractor and any Subcontractor or Supplier and require each Subcontractor and Supplier to comply with these provisions.

ARTICLE 19 – LIQUIDATED DAMAGES

SC-19.0 Add the following language as Article 18 of the General Conditions:

Article 19 – Liquidated Damages

If the Contractor fails to Substantially Complete the Work within the Contract Time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Agreement for each calendar day that the Contractor is in default after the time stipulated in the Contract Documents. The

liquidated damages charged shall be deducted from the Contractor's progress payments and/or retained amount.

The Contractor will not be charged with liquidated damages or any excess cost when the delay in Substantial Completion of the Work is due to the following and the Contractor has given written notice of such delay within seven (7) calendar days to the Owner or Engineer.

- A. To any preference, priority or allocation order duly issued by the Owner;
- B. To unforeseeable causes beyond the control and without fault or negligence of the Contractor, including but not limited to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather and;
- C. To any delays of Subcontractors occasioned by any of the causes specified in Items A and B of this Article.

END OF SECTION 00 73 00

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Project information.
 2. Work covered by Contract Documents.
 3. Access to site.
 4. Work restrictions.
 5. Specification and drawing conventions.
 6. Miscellaneous provisions.

1.2 PROJECT INFORMATION

- A. Project Identification: Five Mile Road and Ridge Road Reconstruction Phase 1
1. Project Location: along Five Mile Road from approximately 500 feet west of Ridge Road eastward to a location approximately 500 feet west of N Beck Road, and along Ridge Road from approximately 250 feet north of Five Mile Road to Halyard Drive.
- B. Owner: Michigan International Technology Center Redevelopment Authority (MITCRA), 44405 Six Mile Road, Northville, MI 48168
1. Owner's Representative: Wendy Hillman. Phone Number: 734-662-0490. Email Address: whillman@twp.northville.mi.us.
- C. Engineer: OHM Advisors, 34000 Plymouth Road, Livonia, MI. Attn: Mark Loch. Phone Number: 734-446-4441.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
1. The project consists of concrete and asphalt road reconstruction, curb and gutter placement, aggregate shoulder placement, underdrain installation, bioswale installation, ditch reconstruction, signing, striping, and restoration as shown on the contract drawings.
- B. Type of Contract.
1. Project will be constructed under a single prime contract.

1.4 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 ACCESS TO SITE

- A. General: Contractor shall have use of Project site for construction operations during the construction period. Contractor's use of Project site is limited only by requirements of the Wayne County DPS Right-of-Way Permit, Owner's use of the site, and requirements of surrounding businesses to the project area. Under no circumstances should access to local businesses be disrupted.

- B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to the public right-of-way or Township-owned property.
 2. Keep driveways and entrances along project serving premises clear and available to Owner, Owner's employees, surrounding businesses, and emergency vehicles at all times.
 3. It is assumed that stockpiling of materials and staging of equipment can take place within the Five Mile and Ridge Road Rights-of-way within the requirements of the Wayne County DPS ROW permit. If any staging outside the ROW is required it shall be the responsibility of the Contractor to obtain permission at no additional cost to the Owner.

1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. CSX Railroad Crossing
1. Any work in the CSX railroad right-of-way shall not begin until explicitly directed by the Owner following receipt of the CSX Railroad Crossing Permit.
 2. Permit for CSX has not yet been obtained and additional requirements may be necessary. Any specific requirements outside of those stated in the contract documents shall be paid for under the Reimbursed Permit Fees pay item.
 3. Inspection and flagging at the CSX crossing will be required and shall be paid for under the Railroad Inspection and Flagging, CSX Railroad pay item.
- C. On-Site Work Hours: Limit working hours from 7:00 a.m. to 7:00 p.m., Monday through Saturday, unless otherwise indicated. No work shall occur on Holidays, as defined in the MDOT 2020 Specifications for Construction.
- D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Engineer and Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- E. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than two days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, and Special Provisions apply to this Section.
- B. 2020 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 01 40 00 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- C. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.
- D. Payment for work under this contract will be based on a unit price or lump sum for work actually completed. Final measurements of the work will be taken by the Engineer to determine the amount of work done and thereby determine the total cost. The method of applying the unit prices to measured quantities will be as herein specified. Payment will include the cost of all labor, tools, materials, and equipment necessary to do the work.
- E. Several items may have been included in the bid form but may not be called for on the plans. These items have been included in order to establish a unit price in the event that the item of work is necessary. The Contractor should be aware that any contract items may increase, decrease, or be zero based on field conditions, or Owner direction.

1.5 INCIDENTAL ITEMS

- A. Any items of work indicated as incidental or included shall be considered as part of the project work and shall be completed at no additional expense to the Owner. Incidental or included items shall include labor, materials, and equipment that may not be specifically listed in the Bid Form or in the drawings or specifications, but which are necessary to complete the work.

1.6 PERMITS

- A. A Wayne County Right-of-Way Permit, a Michigan Department of Environment, Great Lakes, and Energy Joint Permit, CSX Railroad Permit, and NPDES Permit will be applied for by the Owner of this project. The permits must be acquired from the agencies by the Contractor prior to construction. Any permit fees, bonds, and/or permit agency inspection costs will be the responsibility of the Contractor and shall not result in additional cost to the Owner. If an Allowance has been provided for permit costs, non-refundable fees may be applied to this allowance.

PART 2 - PRODUCTS

2.1 PRODUCT AND MATERIAL SELECTION

- A. All products must be in accordance with the most current MDOT Qualified Product List unless otherwise approved by Engineer.
- B. All Materials must be in accordance with the 2020 MDOT Standard Specifications for Construction unless otherwise approved by Engineer.

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Contract unit prices for all pay items shall be described, measured, and paid for in accordance with the 2020 MDOT Standard Specifications for Construction or by Special Provision included in the Appendix, unless otherwise listed below.

1. MISCELLANEOUS RESTORATION ITEMS

Restoration of miscellaneous items such as, but not limited to, street signs, traffic signs, shrubbery and other ornamental landscape items which are damaged, removed, or destroyed by the Contractor in the course of the work shall be repaired or replaced by the Contractor with new materials of equal quality as existed prior to the start of work. All such items for which specific bid items are not listed in the proposal shall be considered as incidental work and shall be replaced or repaired at the expense of the Contractor.

2. GARBAGE/WASTE COLLECTION

The Contractor shall maintain waste collection procedures for all roadways and adjacent businesses during construction. Temporary access for garbage trucks, or any other approved method to allow for regular trash or recycle pick-up shall be considered as incidental.

3. SCHOOL BUS ACCESS

The Contractor shall maintain safe and efficient access for school buses at all times during the construction operations. Any temporary construction measures, or alternate construction methods necessary to allow for bus access during required hours of operation, shall be incidental to the pay items listing in this contract.

4. FINAL CLEAN UP

Final clean-up of the job shall be considered as incidental. Items in this category include removal of debris and litter from the site, removal of surplus materials, sweeping, repair of any damages, and clean out of drainage structures located within the work area.

Surface Restoration shall commence immediately upon completion of final grading or as MDOT seasonal limitations dictate.

END OF SECTION 01 22 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use CSI Form 13.1A.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

- m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within fifteen days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution will not adversely affect Contractor's construction schedule.
 - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.
- C. Substitutions for Convenience: Engineer will consider requests for substitution if received within 60 days after commencement of the Work.
 - 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.

- e. Requested substitution has received necessary approvals of authorities having jurisdiction.
- f. Requested substitution is compatible with other portions of the Work.
- g. Requested substitution has been coordinated with other portions of the Work.
- h. Requested substitution provides specified warranty.
- i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 FIELD WORK ORDER

- A. Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, with a Field Order Form.

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 1. Work Change Proposal Requests issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
 2. Within 20 days, when not otherwise specified after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use CSI Form 13.6D, "Proposal Worksheet Summary," and Form 13.6C, "Proposal Worksheet Detail." or forms acceptable to Engineer.
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer.
 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Work Change Proposal Request Form: Use CSI Form 13.6A, "Change Order Request (Proposal)," with attachments CSI Form 13.6D, "Proposal Worksheet Summary," and Form 13.6C, "Proposal Worksheet Detail." or a form acceptable to Engineer.

1.4 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 01 21 00 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on a Change Order form provided by the Engineer.

1.6 WORK CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C 940 or other form provided by the Engineer. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Engineer at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Engineer.
 - c. Engineer's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange schedule of values consistent with format of EJCDC Document C-620.
 - 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. Include separate line items under principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
 - 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 - 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
 - 6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 - 7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by

measured quantity. Use information indicated in the Contract Documents to determine quantities.

8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Submit Application for Payment to Engineer by the 3rd day of the month for work in the previous month. The period covered by each Application for Payment is one month, ending on the last day of each month. Non-conformance with this schedule will result in delays with Township Board approval of pay estimates at their regular meetings. Other cut off dates for applications can be discussed and agreed upon by all parties.
- C. Contractor's Declaration Form: Each application shall be accompanied by a Contractor's Declaration on the form provided in the project manual.
- D. Application for Payment Forms: Use EJCDC Document C-620 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders, Work Change Directives and Construction Change Directives issued before last day of construction period covered by application.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
 5. Submit final application for payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Schedule of unit prices.
 5. Submittal schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 10. Initial progress report.
 11. Report of preconstruction conference.
 12. Certificates of insurance and insurance policies.
- I. Application for Payment at Substantial Completion: After Engineer issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. "Contractor's Affidavit of Payment of Debts and Claims."
 5. "Contractor's Affidavit of Release of Liens."
 6. "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.
 10. Releases from the public agencies from which permits have been obtained for Work under this agreement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination drawings.
 - 2. Requests for Information (RFIs).
 - 3. Project meetings.
- B. Related Requirements:
 - 1. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

- A. RFI: Request from Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design with 24 hours of receipt of bids. Use CSI Form 1.5A or similar. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.

3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

D. Coordination with Owner and other contractors: The Owner, utility companies, and commercial or private owners may have construction projects occurring within or adjacent to the project limits during the life of this contract. Coordinate construction with all such projects that may be ongoing in the vicinity. Where the Contractor's work affects the operation of the Owner's utilities, coordinate work with the Owner. Contact Owner's representative. Give at least 48 hours of notice to the Owner in order to schedule activities such as valve operation, hydrant operation, sewer and structure cleanout, and similar items of work. No claim for extra compensation or adjustments in the contract prices will be allowed on account of delay or failure of others to complete the work scheduled.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Review: Engineer will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Engineer will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Engineer
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 14. Space for Engineer's response.
- C. RFI Forms: AIA Document G716 or soft-ware generated form with substantially the same content as indicated above, acceptable to Engineer.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Engineer's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt of additional information.
 3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 26 00 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at each construction progress meeting. Use CSI Log Form 13.2B or similar form. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Engineer.

4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Engineer's response was received.
- F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer's within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of record documents.
 - l. Use of the premises
 - m. Use of existing building if Contractor will need access to a building.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.

- x. First aid.
 - y. Security.
 - z. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings as required by the Engineer.
1. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Construction schedule updating reports.
 - 3. Daily construction reports.
 - 4. Site condition reports.
- B. Related Requirements:
 - 1. Section 01 32 33 "Digital Recorded Video Survey."
 - 2. Section 01 10 00 "Summary" for preparing a combined Contractor's construction schedule.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- C. Construction Schedule Updating Reports: Submit with Applications for Payment.
- D. Daily Construction Reports: Submit at weekly intervals.
- E. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work.
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
 - 2. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 3. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 - 4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer administrative procedures necessary for certification of Substantial Completion.
 - 5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 - 2. Work Stages: Indicate important stages of construction for each major portion of the Work.
- D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.

- E. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.
- F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice of Award.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events.
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Work Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.
 - 19. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 32 33 – DIGITAL RECORDED VIDEO SURVEY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction digitally recorded video survey.
- B. Related Sections include the following:
 - 1. Division 01 Section "Unit Prices."
- C. Prior to commencing the work, the Contractor shall have a continuous color audio-video digital recording taken along the designated length of the project to serve as a record of existing conditions. All flash drives and written records shall become the property of the Owner.

1.3 SUBMITTALS

- A. Qualification Data: For photographer.
- B. Flash Drives: Submit a minimum of two complete sets of flash drives upon final approval and acceptance of the videos by the Owner and Engineer (one set each for the Owner, Engineer, and Contractor). Additional sets shall be furnished if requested by the Owner.
 - 1. Identification: On each Flash Drive, provide an applied label with the following information:
 - a. Flash drive number.
 - b. Name of project.
 - c. Name of municipality.
 - d. Name and address of photographer.
 - e. Name of Contractor.
 - f. Date videotape was recorded.
 - g. Description of vantage point, indicating location, direction (by compass point)
 - h. Weather conditions at time of recording.
 - 2. Transcript:
 - a. A record of the contents of each flash drive shall be supplied by a log sheet that identifies each segment in the digital recording by location, roll number, street or road viewing, flash drive counter number, viewing side, starting point, traveling direction and ending point.
 - b. Prepared on 8-1/2-by-11-inch paper. Include a cover sheet with same label information as corresponding flash drive. Include name of project and date of recording on each page.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications:
 - 1. The Contractor shall engage the services of a professional digital recording firm that is actively engaged in color audio-video recordings for various municipalities. The firm shall

have a minimum of two years experience in audio-video digital recording of construction projects.

2. The Owner may make such investigation as he deems necessary to determine the ability of the digital recording firm to perform the work. The Contractor shall furnish the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any digital recording firm if the investigation fails to satisfy the Owner that such firm is properly qualified to carry out the work specified herein. Upon rejection of a digital recording firm, the Contractor shall engage the services of another firm that shall undergo the review and approval process as previously discussed.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. All equipment, accessories, and materials necessary to perform this service shall be furnished by the Contractor and the digital recording firm, except for the plans of the proposed area to be digitally recorded which are to be furnished by the Owner. The Contractor shall be responsible for providing any temporary warning signs or barricades if required during the digital recording operations. Digital recordings shall be on high-quality flash drives for lossless picture quality, suitable for playback on audio/video computer software.
- B. In some instances, digitally recorded coverage may not be suitable for recording necessary details. In such instances, the Engineer may specify digital still photographs to provide coverage. Digital photography must be used and the firm shall provide a flash drive of all images. A suitable labeling system and description of the location of the photograph shall accompany the photographs in PDF form on the flash drive with the digital photographs

2.2 DIGITAL RECORDING

- A. Each flash drive shall begin with the current date, project name, and municipality as well as the general location or station, name of the street, viewing side, and direction of progress. Houses and buildings shall be identified by address.
- B. When conventional wheeled vehicles are used, the distance from camera lens to the ground shall not be less than ten (10) feet to ensure proper perspective.
- C. In some instances, digitally recorded coverage will be required in areas that are not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance approved by the Engineer.
- D. The engineering stationing numbers shall be continuous and accurate and shall correspond to the project stationing within the field of view. Standard engineering symbols (for example, 14 + 84) shall appear in the upper left of the viewing screen. If stationing is not an adequate method to describe the site in certain areas, other visible structural components shall be used to describe the location along/within the site.
- E. Beneath the engineering stationing, periodic transparent alphanumeric information consisting of the project name, location, direction of travel, viewing side, etc., shall appear.
- F. Global Positioning System Satellites may be used in place of or in addition to engineering stationing numbers where available. The global positioning system shall provide updates at one (1) per second and have accuracy of five (5) meters or less spherical accuracy. The GPS coordinate display will be at one (1) meter longitude and 1 meter latitude. (example: 3000N423 9456W294)

- G. To preclude the possibility of tampering or editing in any manner, all digital recordings shall, by electronic means, display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as corresponding GPS coordinates and/or engineering stationing numbers. The date information will contain the month, day and year (for example, 10/5/06) and be placed directly below the time information. The time information shall consist of hours, minutes and seconds separated by colons (for example 10:35:18). This transparent information shall appear on the extreme upper left-hand of the screen.

2.3 DIGITAL VIDEO TRACKS

- A. Digital recordings shall consist of one (1) video and two (2) audio tracks, all of which must be recorded simultaneously. All tracks shall consist of original live recordings and thus shall not be copies of other audio or digital video recordings. Audio track one (1) shall contain the narrative commentary of the camera technician and shall be recorded simultaneously with his fixed elevation video record of the area of construction. Audio track two (2) shall contain the narrative commentary and evaluations of the ground level remote technician whose function shall be to provide a complete circumspection of any features that are not adequately visible to the camera technician. In order to maintain viewer orientation, transition from a fixed camera overview to a remote camera picture shall be accomplished by means of an electronic dissolve.

2.4 LIGHTING REQUIREMENTS

- A. In order to produce proper detail and perspective, adequate lighting will be required to fill in the shadow areas caused by trees, utility poles, road signs and other such objects.
- B. For interior and exterior surfaces of existing buildings, video lighting must be sufficient to provide shadow less light to enable all objects to be distinctive and clearly video taped with correct detail in order to obtain proper perspective. The Contractor shall provide all power required for lighting.

PART 3 - EXECUTION

3.1 SCHEDULE

- A. All digital recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation or when more than ten (10) percent of the ground is covered with snow or standing water unless otherwise authorized by the Engineer.
- B. Digital recording shall be done prior to placement of materials or equipment in the construction area. Flash drives shall be furnished to the Owner at least one week prior to the preconstruction meeting.
- C. No construction shall begin prior to review and approval of the digital video by the Owner.
- D. The Owner shall have authority to reject all or any portion of the digital recording that does not conform to the specifications. Any coverage that is not acceptable to the Owner shall be rerecorded at no additional charge. The Contractor shall reschedule unacceptable coverage within five (5) days after being notified.

3.2 DIGITAL VIDEO COVERAGE – CONSTRUCTION ZONE

- A. Digital video coverage shall include all surface features located within the zone of influence of construction and shall be supported by appropriate audio description. Such coverage shall include, but not be limited to, public right-of-way, easement areas, adjacent private property, all

existing driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, shrubs, fences, culverts, headwalls, retaining walls, and buildings located within such zone of influence. Of particular concern shall be the existence of any faults, fractures, or defects.

- B. Houses and buildings shall be identified visually by house number when visible. Manholes or other utility structures shall also be identified.
- C. The rate of travel used during digital recording shall not exceed forty-eight (48) feet per minute. Panning rates and zoom-in/zoom-out rates shall be controlled sufficiently such that stop action during playback will produce clarity of the object viewed.
- D. The Engineer shall have the authority to designate areas for which coverage may be added or omitted.

3.3 DIGITAL VIDEO COVERAGE – INTERIOR AND EXTERIOR SURFACES

- A. Building exterior coverage shall include, but not be limited to, all the masonry features of the building such as walls, foundations, chimneys or porches. Building interiors shall include, but not be limited to, all outside basement walls and flooring.
- B. All property being digitally recorded for interior record must have a permanent exterior front view recorded on video displayed in upper right-hand corner of the viewing screen for positive identification of property. This view will be no larger than twenty percent (20%) of the picture area and must begin by showing the address. The camera technician shall pan and zoom in and out as necessary to control the clarity of objects being viewed.
- C. All digital recordings shall be done during regular business hours unless otherwise authorized by the Owner or agreed to by an affected property owner.

3.4 DIGITAL RECORDING FIRM RESPONSIBILITIES

- A. The digital recording firm may televise and record areas within public rights-of-way, along municipal-owned easements, through municipal-owned parks, and municipal buildings. When digital recording is to be done on private property, the digital recording firm shall give the Owner sufficient prior notice so that the property owners may be contacted and their permission obtained for the work.
- B. Three (3) attempts must be logged by the camera technician to complete the video project at each location, and a log sheet describing the day, time, and disposition of the contact must be kept.
- C. At no time will the digital recording firm be allowed to use any electrical circuits located inside or outside buildings on private property. The digital recording firm must enter and leave property in a professional and orderly manner.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 2. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 3. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTALS SCHEDULE

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Engineer's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use Specification Section number followed by a decimal point and then a sequential number (e.g., Submittal 06 10 00.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., Submittal 06 10 00.01.A).
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Engineer.
 4. Transmittal Form for Electronic Submittals: Use **electronic form** acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Engineer.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
 5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by Engineer.
- F. Deviations: Identify deviations from the Contract Documents on submittals.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
1. Submit electronic submittals via email as PDF electronic files.
 - a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

- a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches. Text shall be readable on the size of the drawing provided.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Engineer will retain two Sample sets; remainder will be returned.
 - 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Submit product schedule in the following format:

- a. PDF electronic file.
- F. Coordination Drawings Submittals: Comply with requirements specified in Section 01 31 00 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 00 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 00 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 01 78 23 "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

- U. Schedule of Tests and Inspections: Comply with requirements specified in Section 01 40 00 "Quality Requirements."
- V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a Engineer are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible Engineer, for each product and system specifically assigned to Contractor to be designed or certified by an Engineer.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 77 00 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - 1. Approved.
 - 2. Rejected.
 - 3. Approved as Noted
 - 4. Revise and Resubmit.
 - 5. Submit Specified Item.
 - 6. Acknowledge Receipt.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
 - 3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 - 1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 REGULATORY

- A. Public Agency Requirements: It is the intention of these specifications to construct all work in accordance with the applicable requirements of the Owner, the Charter Township of Northville, the MDEQ, the contract specifications, and the contract drawings. Where there is a conflict between any of the aforementioned specifications, and the permit requirements for the agency having jurisdiction, the more restrictive shall govern.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - d. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.
2. Notify Engineer seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed unless otherwise indicated.

K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.9 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:
1. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
 3. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Engineer.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer reference during normal working hours.
1. Submit log at project closeout as part of the project record documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.
1. AABC - Associated Air Balance Council; www.aabc.com.
 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 8. ACI - American Concrete Institute; (Formerly: ACI International); www.abma.com.
 9. ACP - The American Clean Power Association; (Formerly: American Wind Energy Association); www.cleanpower.org.
 10. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 12. AF&PA - American Forest & Paper Association; www.afandpa.org.
 13. AGA - American Gas Association; www.aga.org.
 14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 16. AI - Asphalt Institute; www.asphaltinstitute.org.
 17. AIA - American Institute of Architects (The); www.aia.org.
 18. AISC - American Institute of Steel Construction; www.aisc.org.
 19. AISI - American Iron and Steel Institute; www.steel.org.
 20. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
 21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 22. ANSI - American National Standards Institute; www.ansi.org.
 23. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 24. APA - APA - The Engineered Wood Association; www.apawood.org.
 25. APA - Architectural Precast Association; www.archprecast.org.
 26. API - American Petroleum Institute; www.api.org.
 27. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
 28. ARI - American Refrigeration Institute; (See AHRI).
 29. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
 30. ASCE - American Society of Civil Engineers; www.asce.org.
 31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
 32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
 33. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
 34. ASSE - American Society of Safety Engineers (The); www.asse.org.
 35. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
 36. ASTM - ASTM International; www.astm.org.
 37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
 38. AWI - Architectural Woodwork Institute; www.awinet.org.
 39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
 40. AWPA - American Wood Protection Association; www.awpa.com.
 41. AWS - American Welding Society; www.aws.org.
 42. AWWA - American Water Works Association; www.awwa.org.

43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CEA - Canadian Electricity Association; www.electricity.ca.
51. CEA - Consumer Electronics Association; www.ce.org.
52. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
53. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
54. CGA - Compressed Gas Association; www.cganet.com.
55. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
56. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
57. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
58. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
59. CPA - Composite Panel Association; www.pbmdf.com.
60. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
61. CRRC - Cool Roof Rating Council; www.coolroofs.org.
62. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
63. CSA - Canadian Standards Association; www.csa.ca.
64. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
65. CSI - Construction Specifications Institute (The); www.csinet.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
68. CWC - Composite Wood Council; (See CPA).
69. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
70. DHI - Door and Hardware Institute; www.dhi.org.
71. ECA - Electronic Components Association; (See ECIA).
72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
73. ECIA - Electronic Components Industry Association; www.eciaonline.org.
74. EIA - Electronic Industries Alliance; (See TIA).
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
78. ESTA - Entertainment Services and Technology Association; (See PLASA).
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
82. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
83. FM Approvals - FM Approvals LLC; www.fmglobal.com.
84. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
85. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
86. FSA - Fluid Sealing Association; www.fluidsealing.com.
87. FSC - Forest Stewardship Council U.S.; www.fscus.org.
88. GA - Gypsum Association; www.gypsum.org.
89. GANA - Glass Association of North America; www.glasswebsite.com.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).

93. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
94. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
95. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
96. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
97. IAS - International Accreditation Service; www.iasonline.org.
98. IAS - International Approval Services; (See CSA).
99. ICBO - International Conference of Building Officials; (See ICC).
100. ICC - International Code Council; www.iccsafe.org.
101. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
102. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
103. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
104. IEC - International Electrotechnical Commission; www.iec.ch.
105. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
106. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
107. IESNA - Illuminating Engineering Society of North America; (See IES).
108. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
109. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
110. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
111. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
112. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
113. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
114. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
115. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
116. ISO - International Organization for Standardization; www.iso.org.
117. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
118. ITU - International Telecommunication Union; www.itu.int/home.
119. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
120. LMA - Laminating Materials Association; (See CPA).
121. LPI - Lightning Protection Institute; www.lightning.org.
122. MBMA - Metal Building Manufacturers Association; www.mbma.com.
123. MCA - Metal Construction Association; www.metalconstruction.org.
124. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
125. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
126. MHIA - Material Handling Industry of America; www.mhia.org.
127. MIA - Marble Institute of America; www.marble-institute.com.
128. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
129. MPI - Master Painters Institute; www.paintinfo.com.
130. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
131. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
132. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
133. NADCA - National Air Duct Cleaners Association; www.nadca.com.
134. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
135. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
136. NBI - New Buildings Institute; www.newbuildings.org.
137. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
138. NCMA - National Concrete Masonry Association; www.ncma.org.
139. NEBB - National Environmental Balancing Bureau; www.nebb.org.
140. NECA - National Electrical Contractors Association; www.necanet.org.
141. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
142. NEMA - National Electrical Manufacturers Association; www.nema.org.

143. NETA - InterNational Electrical Testing Association; www.netaworld.org.
144. NFHS - National Federation of State High School Associations; www.nfhs.org.
145. NFPA - National Fire Protection Association; www.nfpa.org.
146. NFPA - NFPA International; (See NFPA).
147. NFRC - National Fenestration Rating Council; www.nfrc.org.
148. NHLA - National Hardwood Lumber Association; www.nhla.com.
149. NLGA - National Lumber Grades Authority; www.nlga.org.
150. NOFMA - National Oak Flooring Manufacturers Association; (See NWFPA).
151. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
152. NRCA - National Roofing Contractors Association; www.nrca.net.
153. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
154. NSF - NSF International; www.nsf.org.
155. NSPE - National Society of Professional Engineers; www.nspe.org.
156. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
157. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
158. NWFPA - National Wood Flooring Association; www.nwfa.org.
159. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
160. PDI - Plumbing & Drainage Institute; www.pdionline.org.
161. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
162. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
163. RFCI - Resilient Floor Covering Institute; www.rfci.com.
164. RIS - Redwood Inspection Service; www.redwoodinspection.com.
165. SAE - SAE International; www.sae.org.
166. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
167. SDI - Steel Deck Institute; www.sdi.org.
168. SDI - Steel Door Institute; www.steeldoor.org.
169. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
170. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
171. SIA - Security Industry Association; www.siaonline.org.
172. SJI - Steel Joist Institute; www.steeljoist.org.
173. SMA - Screen Manufacturers Association; www.smainfo.org.
174. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
175. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
176. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
177. SPIB - Southern Pine Inspection Bureau; www.spib.org.
178. SPRI - Single Ply Roofing Industry; www.spri.org.
179. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
180. SSINA - Specialty Steel Industry of North America; www.ssina.com.
181. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
182. STI - Steel Tank Institute; www.steeltank.com.
183. SWI - Steel Window Institute; www.steelwindows.com.
184. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
185. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
186. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
187. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
188. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
189. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
190. TMS - The Masonry Society; www.masonrysociety.org.
191. TPI - Truss Plate Institute; www.tpinst.org.
192. TPI - Turfgrass Producers International; www.turfgrassod.org.
193. TRI - Tile Roofing Institute; www.tilerroofing.org.

194. UL - Underwriters Laboratories Inc.; www.ul.com.
195. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
196. USAV - USA Volleyball; www.usavolleyball.org.
197. USGBC - U.S. Green Building Council; www.usgbc.org.
198. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
199. WASTEC - Waste Equipment Technology Association; www.wastec.org.
200. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
201. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
202. WDMA - Window & Door Manufacturers Association; www.wdma.com.
203. WI - Woodwork Institute; www.wicnet.org.
204. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
205. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).

4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
 5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
 6. MDEQ; Michigan Department of Environmental Quality; www.michigan.gov/deq
 7. MDOT; Michigan Department of Transportation; www.michigan.gov/mdot
 8. ODOT; Ohio Department of Transportation; www.dot.state.oh.us
 9. Ohio EPA; Ohio Environmental Protection Agency; www.epa.state.oh.us
 10. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
 11. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservation.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 01 25 00 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 01 33 00 "Submittal Procedures."
 - b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

- C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Engineer will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
 4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
 - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
1. Construction layout.
 2. Field engineering and surveying.
 3. Installation of the Work.
 4. Cutting and patching.
 5. Coordination of Owner-installed products.
 6. Progress cleaning.
 7. Starting and adjusting.
 8. Protection of installed construction.
- B. Related Requirements:
1. Section 01 10 00 "Summary" for limits on use of Project site.
 2. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 INFORMATIONAL SUBMITTALS

- A. Certificates: Submit certificate signed by either a land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Engineer of locations and details of cutting and await directions from Engineer before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
 3. For protection of underground utilities in Michigan, contact "MISS DIG" at 1-800-482-7171 a minimum of three (3) working days prior to excavating. This does not relieve the Contractor of the responsibility of notifying utility owners who may not be part of the "MISS DIG" alert system.
 4. Where any utility, water, sewer, gas, telephone or any other public or private utilities are encountered, the Contractor must provide adequate protection for them, and he will be held responsible for any damages to such utilities arising from his operations.
 5. When it is apparent that construction operations may endanger the foundation of any utility, conduit, or support of any structure, the Contractor shall notify the utility owner of this possibility, and he shall take such steps as may be required to provide temporary bracing or support of conduits or structures.
 6. In all cases where permits or inspection fees are required by utilities in connection with changes to or temporary support of their conduits, the Contractor shall secure permits and pay all inspection fees.
 7. When it is necessary in order to carry out the Work that a pole, telephone or electric, be moved to a new location or moved and replaced after construction, the Contractor shall arrange for moving such pole or poles and the lines thereof, and shall pay any charges.
 8. Where it is the policy of any utility owner to make his own repairs to damaged conduit or other structures, the Contractor shall cooperate to the fullest extent with the utility owner and shall see that his operations interfere as little as possible with the utility owner's operations.

9. Sump Pump Discharge Pipe: Any discharge pipe from sump pumps or yard drains encountered on this project, whether or not shown on the plans, which discharges to existing ditches and/or storm sewers or across public or private easements, shall be maintained, replaced, or reconnected as necessary. Bulkheads shall be placed only as approved by the Engineer. Sump pump connections shall be made to the storm drain pipe by a coring method as approved by the Engineer. The Contractor shall use adequate measures to prevent soil erosion, sedimentation, and/or ponding when connecting discharge pipes to existing or proposed ditches. This work shall be considered as incidental to the cost of the project.
 10. Existing Sewer Facilities: Existing sewers or drains may be encountered along the line of work. In all such cases, the Contractor shall perform his operation in such a manner that sewer service will not be interrupted. He shall, at his own expense, make all temporary provisions to maintain sewer service (both dry weather and storm flows).
 11. Unless otherwise indicated on the plans, the Contractor shall replace, at his own expense, any disturbed sewer or drain, or relay same at a new grade to be established by the Engineer such that sufficient clearance for the sewer will be provided.
 12. Existing Water Facilities: Where existing water mains and/or water services are encountered in the work, they shall be maintained in operation. They shall be relayed if necessary using the class of pipe and fittings standard to the Owner of the main.
 13. Existing Drains: Drainage through existing sewers, ditches and drains shall be maintained at all times during construction, and all nearby gutters shall be kept open for drainage.
 14. Maintenance of services as described above shall be considered as incidental to the project cost unless pay items have been included in the bid form for this work.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer according to requirements in Section 01 31 00 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

- E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80°F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 DUST CONTROL

- A. Maintain haul roads, detour roads, other public or private roads, driveways and parking lots in a dust free condition for the duration of the Contract.
- B. Control dust by application of dust control materials and application methods as approved and as directed by the Engineer.
- C. Dust control materials shall be applied as often as is necessary to control dust. Neglect of dust control will not be tolerated.
- D. Should the Contractor be negligent of his duties in providing dust control, the Owner may, with or without notice cause the same to be done and deduct the cost of such work from any monies due or to become due to the Contractor under the Contract. Cost of providing dust control shall be considered incidental to the Work.

3.9 STREET CLEANING

- A. Haul roads, detour roads, other public or private roads, driveways and parking lots will be kept clean and swept at regular intervals to maintain cleanliness.

- B. Trucks hauling excavated material, cement, sand, stone or other loose materials from or to the site shall be tightly covered so that no spillage will occur on the adjacent streets. Before trucks start away from the site, their loads shall be trimmed and covered.
- C. If, in the judgment of the Owner, adequate cleanup efforts are not being expended, including but not limited to, roadway, driveway and drainage maintenance, and removal of surplus materials, further construction shall be halted and work forces directed to the cleanup activity until proper order is restored. Should the Contractor continue to be negligent of his duties in maintaining proper street cleanliness, the Owner will take necessary steps to perform such cleaning and shall charge the Contractor for all costs.

3.10 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements"

3.11 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Provide and maintain weather protection and heating at Contractor's expense to properly protect the Work under construction from damage if the weather conditions require. This work shall include all windbreaks, insulation cover, and other necessary measures required to provide protection from freezing. Continue to provide weather protection and heating as necessary until such time as the Owner takes over the facility.

END OF SECTION 01 73 00

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.

3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.
 5. Submit test/adjust/balance records.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 6. Advise Owner of changeover in heat and other utilities.
 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements, including touchup painting.
 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 01 29 00 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings and manufacturer's startup reports.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or similar type form.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in one of the following formats:
 - a. MS Excel electronic file. Engineer will return annotated copy.
 - b. PDF electronic file. Engineer will return annotated copy.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
1. Operation and maintenance documentation directory.
 2. Emergency manuals.
 3. Operation manuals for systems, subsystems, and equipment.
 4. Product maintenance manuals.
 5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
1. Engineer will comment on whether content of operations and maintenance submittals are acceptable.
 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Engineer.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Engineer will return one copy.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before equipment installation or commencing demonstration and training; whichever is earliest. Engineer will return copy with comments.
1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to equipment installation or commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.

3. Manual contents.
- C. Title Page: Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Engineer.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Engineer that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual,

insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.

7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit two sets of marked-up record prints.
- B. Record Specifications: Submit one paper copy and one annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy and one annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.
 - 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 - 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 4. Note Addenda, Construction or Work Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
 - 1. Format: Annotated PDF electronic file with comment function enabled.

2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Engineer for resolution.
 4. Engineer will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Engineer.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file or scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file or scanned PDF electronic file(s) of marked-up paper copy of Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

- B. Format: Submit miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Engineer's reference during normal working hours.

END OF SECTION 01 78 39

APPENDIX A
SPECIAL PROVISIONS

Wayne County Department of Public Services

WCDPS
(08-27-2021)

PROGRESS CLAUSE

1 of 1

Description

Construction for this project shall not start prior to April 15, 2023 (unless approved by the Engineer in writing.) In no case shall any work commence prior to receipt of formal notice of award by the Owners representative.

This Contract shall be completed in 200 Working Days. **Working Days** will be charged starting on the date that work is started or the date agreed upon, whichever is earlier.

This project is on an “**expedited schedule**”, as defined in 108.08.D of the 2020 MDOT Standard Specifications for Construction. Work days are considered to be Monday through Saturday on this project. Work days will be charged for Saturdays. The Contractor is expected to mobilize sufficient manpower and equipment and to work the required overtime to maintain the expedited schedule.

For this contract, a Working Day will be charged for every day when it is possible for the Contractor to effectively carry out work on the controlling operation, including Saturdays. When the Contractor works on Sundays and Department-recognized legal holidays, in accordance with the “Limitations of Operations” in Section 108.02 of the 2020 MDOT Standard Specifications for Construction, these days will be charged as Working Days. Working Days will not be charged during the period of November 15th to April 15th.

The Progress Schedule shall include, as a minimum, the controlling work items or work days for the completion of the project and the planned dates (or work days for a work day project) that these work items will be controlling operations. When specified in the bidding proposal, the date the project is to be opened to traffic as well as the final project completion date shall also be included in the Progress Schedule.

If the bidding Proposal specifies other controlling dates, these shall also be included in the Progress Schedule.

After receiving Notice of Award of Contract, the Contractor and Engineer shall hold a Preconstruction Meeting. The Project Engineer will arrange the time and place for the meeting.

The named subcontractor(s) for Specialty and/or Designated Items (if such items are designated in the Proposal), is (are) recommended to be at the preconstruction meeting if such items materially affect the work schedule.

Failure by the Contractor to meet the above requirements and dates will result in the contractor being assessed liquidated damages in accordance with section 108.10 of the MDOT Standard Specifications for Construction. Liquidated Damages will continue to be assessed for each calendar day or portion of a day that these restrictions are not met.

20WC108(AX)

General

The Wayne County Department of Public Services, local governmental agencies, utility companies, and commercial or private property owners may have construction projects occurring within the project limits during the life of this contract.

The Contractor shall coordinate his/her construction with all such projects which may be ongoing in the vicinity.

The Contractor's attention is called to the requirements of "Cooperation by the Contractor" as covered in Subsection 104.08 of the 2020 MDOT Standard Specifications for Construction.

No claim for extra compensation or adjustments in contract unit prices will be allowed on account of delay or failure of others to complete work units scheduled.

Construction Projects

The Contractor is advised of the following projects in the vicinity:

DTE will be constructing an underground electrical duct bank from Napier Road to the east side of Ridge Road on the north side of Five Mile Road. This work will cross the north and east approaches at the intersection of Ridge and Five Mile Road. The timing of this work is unknown, but the work should be anticipated to occur during the 2024 construction season.

Plymouth Township will be constructing a sanitary sewer on the south side of Five Mile, from west of Ridge Road, east to the WTUA sanitary sewer at Sta. 75+10, R. This work shall cross the south approach of the Ridge intersection and extend west beyond the limits of the road project.

Consumers Energy is relocating sections of gas main along the north side of Five Mile Road, both east and west of the Ridge intersection. This work will mainly be completed in the Fall of 2023, but may carry over to the Spring of 2024.

AT&T has a riser box and handhole at Sta. 104+10, R that is in conflict with the proposed road work. This should conflict be removed prior to the Stage 3 where the proposed road paving.

Community Events

The Contractor is advised of the following events in the vicinity:

None known.

NOTICE TO BIDDERS
UTILITY COORDINATION

1 of 3

The Contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the 2020 MDOT Standard Specifications for Construction. In addition, for the protection of underground utilities, the Contractor shall follow the requirements in Section 107.12 of the 2020 MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 of the 2020 MDOT Standard Specifications for Construction.

For protection of underground utilities and in conformance with Public Act 53 of 1974, as amended, the Contractor shall dial Miss Dig (811 or 1-800-482-7171) a minimum of three (3) full working days, excluding Saturdays, Sundays, and holidays prior to beginning each excavation in areas where public utilities have not been previously located. Utility 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.

Public Utilities

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

<u>Utility</u>	<u>Contact</u>	<u>Type of Service</u>
Hikmat Kassem Wayne County	Office (734) 858-2757 HKassem@waynecounty.com	Wayne County Storm
Julie Gottardi DTE Electric	Cell 248-331-5590 julie.gottardi@dteenergy.com	Electric
Christopher T. Schneider Consumers Energy - Distribution	Office 734-513-6277 CHRISTOPHER.SCHNEIDER@cm senergy.com	Gas - Distribution
Kevin L. Couturier Consumers Energy - Transmission	KEVIN.COUTURIER@cmsenergy. com	Gas – Transmission
Brad Lear Northville Twp	blear@twp.northville.mi.us	Northville Twp Water and Sanitary Sewer
Patrick Fellrath Plymouth Twp	pfellrath@plymouthtwp.org	Plymouth Twp Water and Sanitary Sewer
Aaron Sprague Western Twp Utilities Authority	Aaron@wtua.org	Sanitary Sewer
Robert Montgomery Comcast	RMontgomery@teamsigma.com	Communication
Chris Shoups AT&T	cs6558@att.com	Communication
Verizon		Communication

NOTICE TO BIDDERS – UTILITY COORDINATION

2 of 3

The owners of existing service facilities that are within the grading or structure limits will move them to locations designated by the Engineer or will remove them entirely from the road Right-of-Way. The owners of public or private utilities will not be required by the County to move additional facilities 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 to the Contractor's operations.

Specific Requirements

Utilities - General: During the course of construction, the Contractor may encounter both overhead and underground utilities. The names and phone numbers of the utility company representatives will be available at the preconstruction meeting.

DTE Energy – Electric

DTE will be constructing an underground duct bank from Napier Road to the east side of Ridge Road on the north side of Five Mile Road. This work will cross the north and east approaches at the intersection of Ridge and Five Mile Road. The timing of this work is unknown, but the work should be anticipated to occur in the 2024 construction season.

AT&T – Phone

There is an AT&T riser, pole and handhole at Sta. 104+10, R that is intended to be relocated (10'south) prior to the road project starting.

Consumers Energy – Gas

Consumers Energy has both distribution, transmission and abandoned gas facilities in the corridor. Consumers will be relocating some sections of the distribution gas main with the work planned for completion in the Fall of 2023. This relocation must be completed before starting on the Stage 1 work. Pre-Stage 1 work can begin without the gas relocation being fully completed.

No impacts are anticipated to the gas transmission line with this project.

There are abandoned gas mains in the corridor. Some of these locations are shown but not all. If an abandoned gas main needs to be removed, Consumers Energy shall be called first before cutting any pipe. If Consumers Energy is acceptable to remove this pipe, the pipe shall be removed and trench backfilled where in conflict with the proposed work. This work shall be paid for separately as, Removing Gas Main.

NOTICE TO BIDDERS – UTILITY COORDINATION

3 of 3

Plymouth Twp

Northville and Plymouth Township have both live and abandoned water main facilities in the corridor. There are impacts to the elevation of the gate well structures which will need to be raised to the final proposed surface.

Some of locations of abandoned water main are shown on the plans, but not all are known. This situation is most likely to occur on the south side of Five Mile. If an abandoned water main needs to be removed, Plymouth Township shall be called first before cutting any pipe. If Plymouth Township is acceptable to remove this pipe, the pipe shall be removed, and trench backfilled where in conflict with the proposed work. This work shall be paid for separately as, Removing Water Main.

Western Twp Utilities Authority

Western Twp Utilities Authority has two sanitary manholes crossing the road at approximately Sta. 74+90. These structures shall be adjusted to the proposed elevation of the new surface.

Wayne County Storm Drainage

Wayne County owns the drainage systems within the ROW. Some section of the existing system will be removed as part of this new projects and a significant amount of new storm sewer will be placed. When removing storm pipe, the pipe shall be removed as shown on the plans or as directed by the Engineer. Bulkheads shall be placed in the remaining sewer if not removed back to the manhole. Manhole holes shall be patched of the pipe is removed from the manhole.

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC**

1 of 7

Description

This work shall be in accordance with the requirements of Section 812 of the 2020 MDOT Standard Specifications for Construction and as herein specified. The Contractor is advised that the 2011 Michigan Manual of Uniform Traffic Control Devices (2009 Federal Edition) is hereby established as governing all work in connection with traffic control devices, barricade lighting, etc., required on this project.

The requirements for “Maintaining Traffic Along Project,” as described in Subsection 812.03.G of the 2020 MDOT Standard Specifications for Construction, shall also apply to the maintenance of local traffic, where directed by the Engineer.

General Requirements

The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within and around the perimeter of the project that were erected for the safety and protection of through and local traffic. This includes, but is not limited to: advance, regulatory, and warning signs, barricades and channeling devices at intersecting streets on which traffic is to be maintained; barricades at the ends of the project and at right-of-way lines for intersecting streets which are to be closed to traffic; and signs, barricades and lights at the intersections of these streets to be closed with the first usable street on each side of the project. Traffic regulators, where required by the Engineer, are included.

Lane closures shall be removed as soon as the work in the lane is complete. Lanes should not be closed unless necessary.

Street name signs and mailboxes in the way of construction will be removed and reset immediately in a temporary location. Street name signs and mailboxes shall finally be set by the Contractor in a location designated by the Engineer upon the completion of final grading in the section involved. This work shall be included in other items of work. New mailbox posts, where required by the Engineer, will be paid for separately.

Provision for and protection of pedestrian traffic shall be maintained at all times.

All areas which are disturbed through the Contractor’s activities or traffic maintenance operations shall be restored to their original condition at the Contractor’s expense.

Separate pay items are provided in the contract to compensate for Maintaining Traffic. All other costs due to Maintaining Traffic will be included in the various unit prices bid for these items.

MAINTAINING TRAFFIC

Maintenance During Construction

Routine maintenance shall be in accordance with Subsection 104.07.C of the 2020 MDOT Standard Specifications for Construction except as herein modified.

The last sentence of the first paragraph under subsection 104.07.C.2 shall be deleted and replaced with the following:

“The Contractor shall be reimbursed for the tonnage of temporary patching material as approved by the Engineer. This material will be paid for as “Misc Bit Mixture for Patching, Temp”.”

Utility Trenches

When traffic is to be maintained at utility trenches in pavements as shown on the plans or as directed by the Engineer, quantities of Maintenance Aggregate, 21AA and Bit Mixture for Patching, Temp will be provided for use at these locations. All other necessary maintenance, including materials, will be at the Contractor's expense.

If the contract calls for maintaining traffic at utility crossings in concrete or asphalt pavement, a full 9 inches compacted temporary base of Maintenance Aggregate, 21AA shall be placed with a 2 inch surface course of Bit Mixture for Patching, Temp.

The Contractor will be billed for any emergency work performed by municipalities or the County of Wayne resulting from the Contractor's failure to address the emergency work after notification.

Stage or Part Width Construction

Where the existing pavement or partial widths of new pavement are to be utilized for the maintenance of local or through traffic, Plastic Drums will be required at 100 foot intervals on tangent sections and 25 foot intervals on tapered sections, or as directed by the Engineer, for channeling and directing traffic through the construction area.

Walks, driveways, and entrances to buildings shall not be unnecessarily blocked. Vehicular access shall be maintained to all commercial properties designated by the Engineer. Construction shall be completed in such a manner as to maintain the required entrance width for traffic at all times. When partial widths of new pavement are available to local traffic, access to drives shall be provided immediately.

MAINTAINING TRAFFIC

Temporary access to street returns, residential drives or commercial drives required as part of staged or part width construction or gapping operations shall not be paid for separately, but shall be included in the aggregate base pay items being placed.

Residential side streets may be closed to through traffic except as specified in the “Specific Requirements” section of this Special Provision.

Part-width construction will not be paid for separately but shall be included in the work of Concrete Pavement of the type specified.

No 24-hour lane closures shall be allowed unless shown on the staging plans or approved by the Engineer.

Milling

When the project calls for milling the full width of the existing pavement, the pavement construction shall be staged according to the following sequence:

For 5-lane and 4-lane pavements, in the first stage the Contractor shall mill and resurface (through the first HMA lift that is to be placed as called for on the plans) the outside/gutter lane in each direction and any right-turn lanes. Maintain traffic on the middle lanes (and the center left-turn lane for 5-lane pavements). To prevent uneven longitudinal joints, the Contractor shall construct longitudinal taper joints either by milling or by paving. The cost for the longitudinal taper joints will not be paid for separately, but shall be included in the cost of the associated milling or paving pay items. All longitudinal pavement edges shall be tapered at a rate of one inch (1”) on one foot (1’). Perform full-depth pavement repairs, conditioning, any sewer work that may be called for on the plans, and curb repairs for curbed roads. Manhole structures in the pavement work area (not including catch basins/inlets at the face of curb) shall be temporarily lowered before milling as called for on the plans or as directed by the Engineer.

In the second stage, the Contractor shall mill and resurface (through the first HMA lift that is to be placed as called for on the plans) the center three lanes (for 5-lane pavements) or 2 lanes (for 4-lane pavements). Maintain traffic on the outside/gutter lane in each direction. Perform full-depth pavement repairs, conditioning, and any sewer work that may be called for on the plans. Manhole structures in the pavement work area shall be temporarily lowered before milling as called for on the plans or as directed by the Engineer.

In the third stage, HMA overlay the full width of pavement with top course mixture as called for on the plans. Traffic shall be maintained in accordance with the MDOT Maintaining Traffic Typical that follow this special provision, and as agreed upon by the Contractor and the Engineer.

MAINTAINING TRAFFIC

At no time will traffic be allowed to drive on the longitudinally milled surface.

When the road has less than four lanes or more than five lanes, staging shall be as called for in the “specific requirements” section of this special provision, or as agreed upon by the Contractor and the Engineer.

HMA Paving Operations

The Contractor shall perform HMA paving work while the section of the road involved is in use by traffic. No traffic shall be allowed on the surface being placed until rolling has been completed and the surface has cooled to 170° F or less. The Contractor shall provide knowledgeable traffic regulators in sufficient number to maintain traffic as described herein, to keep traffic off sections being surfaced, and to provide for safe travel at all times as directed by the Engineer.

Base and curb repair, surface preparation, manhole, catch basin, and other structure adjustment or reconstruction shall be scheduled along the project in such a manner as to provide the required traffic flow without undue shifting of traffic from lane to lane.

Pressure distributors, pavers and rollers shall be equipped with approved flasher lights to warn traffic. The pressure distributor and each roller shall be equipped with not less than one flasher light which shall be mounted on the equipment so as to give a warning signal ahead and behind. Each paver shall be equipped with not less than one flasher light on each side which shall be mounted so as to give the warning signal ahead and behind.

All flasher lights shall operate continuously while work is in progress and at other times as directed by the Engineer.

Interference with traffic at all cross-streets must be held to a minimum during the time required for construction. At least one lane shall be maintained for traffic on the various cross-streets during all major construction except during the actual paving operation. During paving operations on intersecting street aprons, the cross-streets may be temporarily closed to traffic, provided that each cross-street has another outlet. Signing and barricading of these temporary crossings will be the responsibility of the Contractor, as directed by the Engineer.

Turning movements may be prohibited at various times during construction, as directed by the Engineer, upon recommendation from the Wayne County Department of Public Services Traffic & Safety Office.

MAINTAINING TRAFFIC

Sidewalk/Curb Ramp Construction Staging

The Contractor shall submit a plan for maintaining pedestrian movements during construction. The plan shall address construction methods and sequences to be implemented in order to maintain pedestrian movements. The current guidelines include MMUTCD and the Federal Access Board's Proposed Rights-of-Way Accessibility Guidelines (PROWAG).

The Contractor's plan shall include the following minimum guidelines:

- Limit the ramp/sidewalk construction activities to one side of the roadway at a time.
- Limit the duration of ramp/sidewalk construction activities (removal, replacement and concrete curing) to two (2) weeks at any one non-signalized location.
- Limit the duration of ramp/sidewalk construction activities (removal, replacement and concrete curing) to one (1) week at any one signalized location.
- Barricade all ramp/sidewalk construction locations with "plastic drums" placed directly across the walking path. **(Caution tape alone is not acceptable.)**

The Contractor shall be responsible for scheduling a pre-paving meeting with the Engineer, prior to commencing any ramp/sidewalk construction activities, including removals. In attendance shall be the Prime Contractor and all Sub-Contractor(s) involved in the ramp/sidewalk construction activities.

Specific Requirements

Five Mile Road, East of Ridge Road

The stage construction concept to maintain traffic during construction along Five Mile Road consists of maintaining traffic in both directions, east of Ridge Road, during all phases of the project. The first stage, called Pre-Stage 1 will keep traffic on the existing two lanes while constructing a temporary road widening on the south side. Additional removals, grading and mainline storm sewer work can also commence if desired by the contractor on the south side of the road. Flaggers may be needed if work encroaches on the existing EB travel lane during this widening process.

The next stage is Stage 1. Traffic will be shifted on the temporary pavement placed previously and the existing WB roadway will be removed. The proposed new WB road will be constructed along with the north side back curb/shoulder grading.

Upon completion of Stage 1, traffic will be shifted to Stage 2. Traffic will be split, with WB

MAINTAINING TRAFFIC

on the new road lane built in Stage 1 and EB continuing to travel on the temporary road constructed in Pre-Stage 1.

Upon completion of Stage 2, traffic will shift to Stage 3. The WB lane will remain on the new WB lane constructed in Stage 1, the EB lane will be placed on the new road section constructed in Stage 2. In this Stage the new EB lane and south side grading will occur.

Upon completion of Stage 3, all three lanes can be full open to traffic.

Five Mile Road, West of Ridge Road

To expedite construction on Five Mile, west of Ridge Road the west leg of the Five Mile Road and Ridge Road intersection can be closed to traffic for a period of 30 days to allow the contractor to fully construct the west leg of the intersection. Upon completion, this leg of the intersection will be reopened. Traffic will be detoured north on Ridge Road to Six Mile Road, the west. Because this route is on an existing gravel road, and pay item has been set up to grade the road when needed and as directed by the engineer.

Ridge Road – South of Territorial Court

Similar to Five Mile Road, Ridge Road stage construction concept is to maintain traffic during construction along Ridge Road from Halyard to Territorial Court in both directions, to Territorial Court, during all phases of the project. This will require the temporary widening of the east side of Ridge an additional 12'. This widening will occur in Pre-Stage 1.

In Stage 1, NB traffic will shift to the east on the new temporary pavement and the SB lane will shift to the old NB lane, maintaining two-way traffic. During this stage, the west side of the road would be reconstructed. An additional 9' of temporary pavement will need to be constructed after placing the new concrete road to maintain Stage 2 two-way traffic.

After the west side of Ridge Road is constructed and temporary pavement placed, NB traffic will switch to the one permanent lane and SB traffic on to the temporary lane. The east side of Ridge Road will then be constructed during Stage 2. The east side permanent NB lane and ditching will be constructed.

During Stage 3, traffic will be placed on the two permanent lanes and work will involve removing the temporary lane along the SB roadway and the creation of the permanent shoulder and ditch on the west side of the road.

Ridge Road – North of Territorial Court to Five Mile

North of Territorial Court to Five Mile Road, the road is to be closed for a 45-day period. This will allow the south leg of the intersection to Five Mile Road to be constructed full width. This will also minimize traffic staging impacts at the RR crossing.

As mentioned above, the section of Ridge Road north of Five Mile Road will also be closed for a 45-day period in Stage 2.

MAINTAINING TRAFFIC

In summary three of the four legs are planned to be fully closed at some point during construction. The north leg will be closed first (Stage 1). When the north leg reopens, the south and west legs can be closed (Stage 2).

Five Mile and Ridge Intersection

The intersection paving will take advantage of the road closures proposed on three of the four legs of the intersection. The north half of the intersection will be paved in Stage 1 and the south half will be in Stages 2A and 2B. During Stage 1, when the north leg of the intersection will be closed, NB traffic will be detoured WB on Five Mile to Napier Road, north on Napier Road to Six Mile Road, and east on Six Mile Road to SB Ridge Road.

During Stage 2A, the south and west legs of the intersection will be closed. For the west leg closure on Five Mile, WB Five Mile traffic will be detoured to NB Ridge Road, Ridge Road to Six Mile Road, west on Six Mile Road to Napier Road, and then south on Napier Road back to Five Mile Road. For EB Five Mile approaching the intersection, traffic will be detoured to NB Napier Road, north on Napier Road to Six Mile Road, east on Six Mile Road to Ridge Road, and then south on Ridge Road back to Five Mile Road.

The detour for the south leg closure of Ridge Road traffic will be detoured to NB Ridge Road, NB Ridge Road to WB Six Mile Road, WB Six Mile Road to SB Napier Road, and SB Napier Road back to EB Five Mile Road. For NB traffic approaching the intersection, traffic will route EB on Halyard to Beck Road. NB on Beck to Five Mile, WB on Five Mile back to Ridge Road.

Ridge Road Intersection with Halyard

The intersection paving at Halyard and Ridge Roads will be completed by first placing temporary pavement on the east side of Ridge Road in Pre- Stage 1. This will allow traffic to switch to the east half of Ridge Road in Stage 1, where the west half of the permanent road and the required temporary lane can be built.

The Halyard approach to the intersection will be built part width. The north half of the at the intersection is planned first in Stage 2A with traffic routed on the south half of the intersection. Stage 2B will see south half of the intersection built.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
MATERIALS ACCEPTANCE

1 of 2

General

The basis of acceptance for the following materials listed in the current Michigan Department of Transportation Materials Source Guide will be modified from Certification, Approved Manufacturer, Qualified Products List (QPL), or Visual Inspection (VI) to Testing. Section 106, "Quality Assurance Acceptance Program," of the 2020 MDOT Standard Specifications for Construction is hereby deleted from this contract. The testing may be performed by the County of Wayne or a commercial testing company at the County's option. The testing will be at no additional cost to the Contractor.

Specification

Section

Material

704	Steel Sheet Piling (Test Data Certification is required)
708	Prestressed Concrete Bridge Beams
901	Cement
902	Coarse Aggregate
902	Dense-Graded Aggregate
902	Granular, Class I
902	Granular, Class II
902	Granular, Class III, Modified
902	Fine Aggregate
904	Emulsified Asphalt
905	Bar Reinforcement
905	Epoxy Coated Bar Reinforcement (Epoxy Coating Certification is required)
905	Welded Steel Wire Reinforcement (Mesh)
906	High Strength Steel Bolts (Test Data Certification is required in addition to Testing)
907	Woven Wire Fencing Materials (Test Data Certification is required)
907	Steel Posts
907	Posts for Fence and Gates (Steel)
907	Gates and Fence Fitting and Hardware (General Certification is required)

MATERIALS ACCEPTANCE

<u>Specification Section</u>	<u>Material</u>
909	Reinforced Concrete Pipe
909	Non-Reinforced Concrete Pipe
909	Corrugated Steel Pipe
909	Corrugated Polyethylene Pipe (includes DWHDPE Smooth-Lined)
909	Corrugated Polyvinyl Chloride Pipe
909	Smooth Plastic Pipe for Underdrains
909	Precast Concrete Box Sections
913	Concrete Brick
913	Concrete Block
913	Precast Reinforced Concrete Units for Drainage Structures
913	Precast Concrete Bases, Sumps and Handholes
913	Slope Pavement Block
914	Transverse Pavement Joint Assemblies
914	Fiber Joint Filler (1” and above)
914	Dowel Bars
914	Deformed Bars
914	Tie Bars
914	Structure Expansion Anchors (QPL with Pull out Testing)
914	Bolts for Structure Expansion Anchors
914	Hot Poured Joint Sealant (Test Data Certification is required)

Certifications for the above-listed materials may be required as directed by the Engineer.

The Contractor is required to give a minimum **72-HOUR NOTICE (three (3) work days, excluding Saturdays, Sundays and Holidays)** to schedule Testing Office personnel.

The Contractor is required to maintain an inventory of Wayne County tested stock. All material which has been approved by the Testing Office and shipped to the project will be listed on a “Shipment of Tested Stock” receipt and shall be presented to the Engineer at the time of the delivery of the material to the site.

A copy of the “Shipment of Tested Stock” receipt will be sent to the Testing Office. Failure of the Contractor to maintain an inventory, which results in the shipment of untested material to the project, will result in the rejection and removal of the material from the project.

Cracking or other physical damage due to shipping, handling, or the manufacturing process will lead to rejection of that material.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RAILROAD INSPECTION AND FLAGGING

RAL:DGT

1 of 1

APPR:CRB:JJG:05-18-21

a. Description. This work consists of providing advance notice to a representative of CSX Railroad (herein after called the Railroad) and the Engineer meeting the railroad notice requirements found in the contract for providing flaggers or work on, above, for below Railroad property.

b. Materials. None specified.

c. Construction. Ensure construction methods are in compliance with the requirements in the contract.

d. Measurement and Payment. The Contractor must pay or pre-pay (if required by the Railroad) to the Railroad the full amount of the Railroad’s invoice for inspection and flagging. Prior to submitting payment requests for reimbursement of flagging costs to the Engineer, review for accuracy the actual flagging costs and days worked against the billed or pre-paid amount. Resolve any inconsistencies with the Railroad prior to submitting to the Engineer. Provide to the Engineer a statement of costs paid for flagging and detailed itemization to support the actual cost paid or pre-paid amount. The Engineer will reimburse the Contractor upon satisfactory review and approval of submitted documentation for inspection, and flagging services rendered. This process will continue as long as the need for flagging services exists.

Costs incurred for inspection and flagging due to the failure of the Contractor to properly notify the Railroad in advance of beginning work which may require a flagger as stated in the contract or Contractor utilizing inspection and flagging at times when Contractor work is not taking place within the railroad ROW, are the responsibility of the Contractor. Any dates invoiced beyond approved Progress Clause dates or approved extension of time dates without liquidated damages will not be reimbursed unless approved otherwise by the Engineer.

Provide the Railroad a documented notice 36 hours in advance when flagging is no longer needed, with a copy to the Engineer and retain a copy of this documented notification. If the notification to the Railroad is not at least 36 hours in advance of no longer needing flagging, the Railroad will schedule and the Contractor must pay such flagging services until said cancellation notice is confirmed by the Railroad. Before final payment is made by the Engineer to the Contractor for the project, submit satisfactory evidence indicating all bills for inspection and flagging services furnished by the Railroad have been paid. This pay item covers only inspection, and flagging services provided by the Railroad.

Pay Item	Pay Unit
Railroad Inspection and Flagging, CSX Railroad	Dollar

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
PERMIT REQUIREMENTS

OHM:mrl

Page 1 of 1

11/08/23

a. Description. This special provision describes the way the reimbursement for permit fees in Section 107 of the 2020 Standard Specifications for Construction will be paid.

The following permits are required some of which require additional procedural steps to finalize the permit process by the Contractor. The Contractor shall fulfill all obligations and post all monies, insurance etc. as part of the approved application.

EGLE Joint Application

- Wetland impact: A EGLE Joint application has been submitted. This is a no cost permit.

Wayne County Department of Public Service Permit

- Road reconstruction on a County owned road. There is an unknown fee for this permit to be paid by the contractor and reimbursed under this pay item.

Wayne County Department of Public Service Soil Erosion Permit

- Not required. Included as part of he WCDPS Permit.

National Pollutant Discharge Elimination Permit (NPDES)

- Soil Erosion Permit: This permit covers soil erosion control within the project limits. This is a no fee permit and has been obtained and is included in this proposal.

b. 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:

<u>Pay Item</u>	<u>Pay Unit</u>
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.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DAMAGE CLAIMS

1 of 2

Description

This work shall consist of administering and managing a Damage Control Program and acting on all damage claims that occur during the contract. The work shall be in accordance with the provisions of Subsection 107.10.E of the 2020 MDOT Standard Specifications for Construction and as herein amended.

General Requirements

It is the Contractor's responsibility to act on all damage claims (e.g., vehicles, property, utilities, etc.) that occur during the contract.

Delete subsections 107.10.E.3.a. and 107.10.E.3.b. and insert the following:

- a. **Claims of \$1500 or less** - The Contractor shall notify the claimant of final disposition of the damage claim within 60 days of receipt of the damage claim form from the Engineer. Prior to 60 days, the Contractor may request an extension for a maximum 30 days, made in writing to the Engineer.
- b. **Claims exceeding \$1500** - The Contractor shall have 120 days to bring final disposition to the claim.

Delete subsection 107.10.E.4 and insert the following:

4. Final Disposition -

The Engineer shall withhold payment from the Contractor in the amount equal to the claim until final disposition. The final estimate shall also be withheld until final disposition of the claim.

- a. **Claims of \$1500 or less** - Final disposition shall include payment, settlement or denial of the claim by the Contractor's insurance company or the Contractor.
- b. **Claims exceeding \$1500** - Final disposition shall include payment, settlement, or denial of the claim by the Contractor's insurance company, or settlement or payment by the Contractor. (Denial by the Contractor is not sufficient.)

Measurement and Payment

Payment for any and all work required to administer and process Damage Claims is included in payments made for other items of work.

2 of 2
DAMAGE CLAIM NOTICE

*This information is required by Subsection 107.10.E of the Standard Specifications to evaluate damage claims.
Information must be provided completely and accurately in order for your claim to be considered.*

The intent of this procedure is to provide for a due process and prompt investigation that leads to the acceptance or denial of claims for damage to private property in construction zones.

Please print or type and be as detailed as possible. Complete the "Claimant Information" section, sign, date and return to Wayne County Project Engineer.

NOTE: To expedite the investigation, it is very important that you return this form to the Project Engineer within five (5) days.

CLAIMANT INFORMATION

NAME	HOME PHONE NO.	BUSINESS PHONE NO.	FAX NO.
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CLAIMANT'S STREET ADDRESS	CITY	STATE	ZIP CODE
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DATE AND TIME OF INCIDENT	AMOUNT OF YOUR CLAIM \$
---------------------------	----------------------------

HOW DID YOU DETERMINE THE VALUE OF YOUR CLAIM? Describe in detail and provide documentation to support the amount of the claim.

LOCATION – Please include route or road, direction of travel, nearest cross street.

DID THE INCIDENT OCCUR IN A CONSTRUCTION ZONE? <input type="checkbox"/> YES <input type="checkbox"/> NO	PAVEMENT CONDITION: <input type="checkbox"/> WET <input type="checkbox"/> DRY
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DESCRIPTION OF CLAIM – Be as detailed as possible. Describe work in progress that you observed. Were there cones or barrels on the job site? Include names of witnesses (if available), weather conditions, Contractor's name(s), truck numbers, copies of any estimates, photos (if available), etc. Attach additional sheets if necessary.

I CERTIFY THAT THE ABOVE INFORMATION IS, TO THE BEST OF MY KNOWLEDGE, TRUE.	CLAIMANT SIGNATURE	DATE
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THIS SECTION FOR COUNTY USE ONLY

Instructions to P.E. - Attach a self-addressed stamped envelope when forwarding form to claimant. Contact contractor promptly after receiving initial notification of claim. Obtain complete information from claimant and forward to contractor within 14 days.

JOB NUMBER	WORK ORDER #	DATE CONTACTED BY CLAIMANT	DATE FORM REC'D FROM CLAIMANT
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CONTRACTOR	DATE SENT TO CONTRACTOR
------------	-------------------------

CONTRACTOR'S PHONE #	FAX #	CONTRACTOR'S CLAIM OFFICER
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PROJECT ENGINEER	PROJECT ENGINEER'S PHONE #	FAX #
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PROJECT ENGINEER'S ADDRESS

THIS SECTION FOR CONTRACTOR/INSURANCE COMPANY USE ONLY

Instructions to Contractor - The contractor is required to investigate the claim and respond with final disposition within sixty (60) calendar days for claims of \$1500.00 or less (one hundred and twenty (120) calendar days for claims greater than \$1500.00) of receipt of the claim from the Project Engineer.

HANDLED BY: <input type="checkbox"/> CONTRACTOR <input type="checkbox"/> INSURANCE CO. <input type="checkbox"/> SUBCONTRACTOR	DATE REC'D FROM PROJECT ENGINEER
---	----------------------------------

INSURANCE CO./SUB-CONTRACTOR NAME (if handled by)	DATE CLAIMANT CONTACTED
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ADJUSTER	DATE OF FINAL DISPOSITION
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ADJUSTER'S PHONE #	CLAIM #	DATE OF NOTICE TO CLAIMANT	DATE OF NOTICE TO P.E.
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COMPLETE DESCRIPTION OF ACTION TAKEN – include justification for Action Taken.

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
WORKING DAYS**

1 of 1

Working days specified in “Limitations of Operations” in Section 108.02 of the 2020 MDOT Standard Specifications for Construction shall be revised as follows:

There will be no work on Saturdays (unless the contract calls for an “expedited schedule”), Sundays or the following holidays, unless authorized by the Engineer. If such work is authorized, inspection will be provided at no cost to the Contractor.

The holidays are:

- Martin Luther King’s Birthday (Observed 3rd Mon. in Jan.)
 - Memorial Day
 - * Independence Day
 - Labor Day
 - Columbus Day
 - State and National Election Days
 - Thanksgiving Day
 - Day after Thanksgiving Day
 - ** Christmas Eve
 - ** Christmas Day
 - ** Working days following Christmas Day Holiday and preceding New Year’s Eve Holiday
 - ** New Year’s Eve Day
 - ** New Year’s Day
- * If the holiday falls on a Saturday, the preceding Friday shall be the designated holiday. If the holiday falls on a Sunday, the following Monday shall be the designated holiday.
- ** If Christmas Day and New Year’s Day fall on a Saturday or a Sunday, the preceding Friday and the following Monday shall be the designated holidays.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
CONSTRUCTION ALLOWANCE

OHM/mrl

Page 1 of 1

11/10/2023

a. Description. The following allowance is being set up to allow the Engineer to make payments to the contractor for items of work performed where no pay items exist. A preset amount of \$150,000 has been set up in the contract that the Engineer can draw down upon to expedite the work a payment to the contractor.

b. Measurement and Payment. The completed work for **Construction Allowance** will be paid for at the contract unit price for the following:

Contract Item (Pay Item)	Pay Unit
Construction Allowance	Dollar

Construction Allowance will used by the Engineer for payment to the contractor for work where no pay item exists and when it is not desired to administer a formal change order to the contract. It is anticipated the Engineer will request an estimate for the work to be performed, or that was performed (with back up justification). If the Engineer agrees with the provided information, and once the work has been completed and approved, payment can be made.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
CLEARING, MODIFIED

OHM:mrl

1 of 1

09-15-22

a. Description. This work consists of clearing all trees and vegetation in locations shown on the plans or as directed by the Engineer in accordance with section 201 of the 2020 Standard Specifications for Construction. It is the intent of this pay item to only pay for this item where shown on the plans.

b. Materials. None.

c. Construction. Remove existing vegetation at locations that are shown on the planes including all stumps and roots. Dispose of the vegetation and trees according disposal laws.

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:

Pay Item	Pay Unit
Clearing, Modified.....	Acre

Clearing, Modified will be paid for by area in acres which includes all labor, equipment and materials necessary to complete the work as described.

Additional areas where existing brush exists, but no trees larger the 6" exist that is not shown on the plans to be paid as **Clearing, Modified**, shall not be paid for separately, but shall be included in the earthwork items. Additional areas that are identified during construction that are not shown to be paid as **Clearing, Modified**, but where 6" trees exist, maybe added by the Engineer and paid as **Clearing, Modified**, or the trees may be paid for separate removal individually and the brush included in earthwork items.

Wayne County Department of Public Services
WCDPS
(08-27-2021)
SPECIAL PROVISION
FOR
MISCELLANEOUS OBSTRUCTION REMOVAL

1 of 1

Description

This work shall consist of removing obstructions that are encroaching into the safety area or right-of-way of the roadway as shown on the plans or as directed by the Engineer. Remove, or partially remove, as shown on the plans or as directed by the Engineer, miscellaneous items including, but not limited to, landscaping materials, boulders, railroad ties, parking blocks, brick retaining walls and wood, metal or concrete posts.

Construction

Any parts of features that are to be left in place shall be protected at all times. The removed items that are not claimed by the property owner/resident shall become the property of the Contractor. Regrade site, including earth excavation and embankment, to match adjacent topography.

Measurement and Payment

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

Pay Item	Pay Unit
Misc Obstruction, Rem	Cubic Yard

The contract unit price shall be payment in full for all materials, labor, and equipment required to disassemble, break down, and remove items and any earth excavation and embankment necessary to grade the site to match the adjacent topography.

Topsoil and sod or seed required to restore the area after the removal will be measured and paid for separately.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
REMOVING ABANDONED PIPES

OHM:mrl

1 of 1

09-13-22

a. Description. The work consists of removing existing Consumers Energy abandoned gas mains or abandoned water main, regardless of size, where in conflict with the proposed work. Perform work in accordance with the 2020 Michigan Standard Specifications for Construction and MDOT Standard Plans.

b. Materials. Backfill material shall follow MDOT storm trench backfill details as shown in MDOT Std Plan R-83 Series.

c. Construction. Remove sections of abandoned gas main or water main as shown on the plans or directed by the Engineer. Before cutting any gas main, contact Consumers Energy to verify the gas main is in fact abandoned and for instructions on gutting the main. Before cutting any water main, contact either Plymouth Twp (south side) or Northville Twp (north side) to verify the water main is in fact abandoned and for instructions on cutting the main. No open ends shall be left. All open end shall be permanently capped. If the main has not been filled with flowable fill, flowable fill shall be placed as directed by the Engineer and paid for separately as, **Flowable Fill (Cyd).**

Remove all sections of the main the Engineers deem is in conflict with the proposed work. Dispose of the main according disposal laws. The trench shall be backfilled following MDOT storm trench backfill details as shown in MDOT Std Plan R-83 Series.

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:

Pay Item	Pay Unit
Removing Abandoned Gas Main	Foot
Removing Abandoned Water Main	Foot

Removing Abandoned Gas Main and **Removing Abandoned Water Main** will be paid for by length in feet for the length of gas main removed and includes all labor, equipment and materials necessary to complete the work as described.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
EXPLORATORY EXCAVATION

OHM:mrl

1 of 1

09/15/22

a. Description. The work of Exploratory Excavation shall consist of excavating an exploratory trench, exposing an existing culvert, sewer, sump discharge or utility, and verifying the condition, size, material, elevation and alignment, and backfilling the trench. This work shall be performed in accordance with Section 205 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and any special or supplemental specifications in this proposal. The Contractor shall be responsible for locating all utility crossings and service leads as a part of the overall project cost. All exploratory work required for locating existing utilities shall not be paid for separately unless specifically called out in the plans or if the Engineer gives the Contractor explicit permission in advance of the excavation. The intent of Exploratory Excavation is not to provide payment to the Contractor for locating each existing utility throughout the project. The Contractor is responsible for “using reasonable care to establish the precise location of the underground facilities in advance of construction” (Public Act 174-2013) as amended and is a part of the overall project contract.

b. Materials. If the trench is located within the limits of pavement or within a 1 on 1 influence, the trench shall be backfilled with Class II material and compacted to a minimum of 95% of its maximum density. If the trench is located outside of the limits of pavement, excavated material from the trench may be used to backfill the trench and compacted to a minimum of 95% of its maximum density, unless otherwise directed by the Engineer.

c. Construction Methods. The Contractor shall contact Miss Dig a minimum of three full working days prior to beginning trenching. The exploratory trench shall be backfilled only after the Engineer has approved it for backfilling and no later than 24 hours after approval has been given.

Any repair or replacement of the exposed pipe or facility shall be in accordance with other contract pay items and with Public Act 174-2013, as directed by the Engineer. Repair of exposed culverts and sewers damaged by exploratory or excavating operations shall be the responsibility of the Contractor.

d. Measurement and Payment. The completed work for Exploratory Excavation will be paid for at the contract unit price for the following contract pay item:

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Exploratory Excavation.....	Each

Exploratory Excavation will be measured by the unit each and paid for at the contract unit price per each, which price shall be payment in full for furnishing all labor, equipment, and materials needed to accomplish this work. This includes backfilling the trench and compaction as directed by the Engineer.

The completed work for Exploratory Excavation shall only be measured for those locations called out on the plans or as required by the Engineer. Multiple utility verifications may be included in one paid excavation if the utilities are close in proximity. Multiple payments at the discretion of the Engineer may be made for a test hole depending on the difficulty and depth of the excavation.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
STAGE CONSTRUCTION EARTHWORK

OHM/mrl

1 of 2

11-07-23

a. Description - This work shall be done in accordance with Section 205 of the 2020 Standard Specifications for Construction, except as specified herein. The item Stage Construction Earthwork shall include all earthwork required to temporarily move, grade, provide or dispose of earth as required to convey the stage construction traffic, temporary drainage, or any other removal or placement of earth. This item also included the removal of any temporary stone placed for maintaining traffic, as required by the Engineer, to allow for proper topsoiling and seed growth and the filling of temporary ditches created after construction.

b. Construction Methods. The contractor shall excavate or place suitable earth materials for building temporary roadways, to convey temporary drainage during all stages of the project, or any other use of earth material during stage construction work.

The Contractor shall be responsible for maintaining drainage during construction. Provisions have been shown on the Maintenance of Traffic plans to construct temporary swales and insert temporary culverts (paid separately). Additional measures to maintain storm runoff during the construction shall be the responsibility of the Contractor. If additional drainage features are required, this shall be discussed with the Engineer, and payment may be made for catch basins and culverts as required. The additional grading of swales and ditches, so water does not collect on the road, is the responsibility of the contractor and will not be paid for separately.

c. Measurement and Payment. The completed work for Miscellaneous Removals will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Stage Construction Earthwork.....	Lump Sum

Stage Construction Earthwork will be paid by lump and include all labor, material and equipment to perform the work. The item shall include proper storage of the material for reuse in later stages.

The pay items Excavation, Earth or Embankment, CIP, Modified will be paid on the project only based on the change in earth grading between the existing condition (prior to construction) and final proposed condition. Stage Construction Earthwork compensates the contractor for the double handle of earth material for stage construction purposes. Progress

payments shall be made throughout the project duration based on an agreed upon percent complete for this work.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
SUBGRADE UNDERCUTTING, TYPE II, SPECIAL

OHM:mrl

1 of 1

09-06-22

a. Description. Complete this work in accordance with section 205 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction.

b. Materials. Complete the **Subgrade Undercutting, Type II, Special** in accordance with the standard MDOT pay item "Subgrade Undercutting, Type II", with the exception that the backfill material will be included in payment for **Subgrade Undercutting, Type II, Special**. This backfill material must be 1-inch by 3-inch stone. The Engineer will determine the need for Subgrade Undercutting, Type II, Modified versus **Subgrade Undercutting, Type II, Special**.

Crushed concrete will not be allowed due to the proximity to natural water courses

c. Construction. For reconstructed roadways, perform **Subgrade Undercutting, Type II, Special** on poor subgrade underneath the proposed aggregate base, as deemed necessary by the Engineer. Compact the backfill material in lifts not exceeding 10 inches. Compact the backfill material to a minimum of 95% of the maximum dry density of the material based on the Modified Proctor (ASTM D1557).

d. Measurement and Payment. The completed work will be paid for at the contract unit price for the following pay item:

Pay Item	Pay Unit
Subgrade Undercutting, Type II, Special.....	Cubic Yard

When required, the completed work as described will be measured in cubic yards compacted in place based on the lines and dimensions called for on the plans or as directed by the Engineer.

**WCDPS
(08-27-2021)**

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DITCH CLEANOUT MODIFIED**

1 of 1

Description

Complete earth excavation and clearing required to establish or restore positive drainage in ditches. This work consists of removing silt, roots, brush, stumps and/or trees less than 6 inches in diameter, and other objectionable materials in the slopes and bottom of the ditch, contouring the ditch to the required cross-section as shown on the plans as directed by Engineer, and disposing of the surplus and waste material generated. This work shall be in accordance with the applicable provisions of Sections 201 and 205 of the 2020 MDOT Standard Specifications for Construction and the Wayne County Standard Plan E6-1 for “Ditch Cleanout”.

Construction

See Wayne County Standard Plan E6-1.

Measurement and Payment

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

Pay Item	Pay Unit
Ditch Cleanout, Modified	Station

“Ditch Cleanout, Modified” will be measured by length along the centerline of ditch, with each side of the road measured separately. The work shall include the disposal of surplus and waste material off the project site. The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified.

Topsoil and sod or seed required to restore the ditch after the removal will be measured and paid for separately.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
EMBANKMENT, CIP, MODIFIED

1 of 2

Description

This item of work shall be done in accordance with Section 205 of the 2020 MDOT Standard Specifications for Construction except as modified herein.

Construction

The first paragraph of Subsection 205.03.H.4, titled “Placing and Compacting Embankment,” shall be replaced with the following:

“Embankments shall be constructed with similar suitable in-situ soils that the embankment is to be placed upon as determined by the Engineer. The embankment material shall have a maximum unit weight of at least 95 pounds per cubic foot.

For example; impervious materials may not be placed upon in-situ granular materials, in effect blocking the drainage patterns of the granular materials and/or aggregate base course which may require vertical drainage. Similarly, any granular embankment must be placed such that water pockets are not created if placed upon an impervious material.

Embankment material shall not contain organic material, concrete, masonry, asphalt, foreign and frost heave materials. Frost heave materials are defined as material containing more than 30 percent silt particles by weight with a plasticity index less than 10. Silt is material having a particle size from 0.002 mm to 0.075 mm.

All embankment material must be approved by the Engineer prior to placement. All off-site embankment material must be approved by the Engineer prior to shipping.

Within the top three feet, the embankment shall be constructed to a uniformly stable condition by using the same textured material. A minimum 50 foot longitudinal transition shall be used between two different textured materials.”

The fourth paragraph of Subsection 205.03.H.4 shall be replaced with the following:

“Stones and broken rock occurring within the construction limits may be placed at the discretion of the Engineer. No stone or broken rock greater than four inches will be permitted to be placed in embankments. All voids shall be completely filled with suitable soils approved by the Engineer and compacted to not less than

EMBANKMENT, CIP MODIFIED

95 percent of its Maximum Unit Weight. Do not place stones, broken concrete, and broken rock layers within 3 feet of the subgrade surface.”

Measurement and Payment

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

Pay Item	Pay Unit
Embankment, CIP, Modified	Cubic Yard

The contract unit price shall be payment in full for furnishing all materials, labor, equipment for placing and compacting the embankment.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
ROAD GRADING for DETOUR ROUTE

OHM/mrl

1 of 1

9-06-22

a. Description - This work shall be completed as requested by the Engineer and shall include the grading of any Wayne County gravel surfaced roadway that is impacted by this project's detour route. This shall include Ridge Road, from Five Mile, north to Six Mile Road, and, Six Mile from the east side of the intersection of Napier Road east to where the pavement returns between Napier Road and Ridge Road.

b. Materials. No new materials are included in this item of work. Should additional surface gravel be required, this item work shall be paid as, Aggregate Surface Cse, Modified (ton). Additional surface gravel shall only be placed if directed by the Engineer,

c. Construction Methods. The contractor shall shape the existing road to as a close to the existing shape (prior to construction) as possible, without generating excess spoils, removing any ruts, bumps or uneven sections of roadway to provide a smooth-running surface. No gravel ridges shall be lefts at any driveway entrances.

The Contractor shall be responsible for maintaining a relatively smooth surface along this detour route and shall grade the above noted sections of road as many times as directed by the Engineer. This work shall only be required while the detour route is actively be used, Stages 2A and 2B.

d. Measurement and Payment. The completed work for, **Grading for Detour Route**, will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Grading for Detour Route.....	Each

Grading for Detour Route will be paid once by per time (by the Each) grading is required on both the road sections noted above. Should only partial sections of road be required to be graded, only partial payment shall be made based on the length of road graded as measured along the centerline of the road.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
CULVERT CLEANOUT

1 of 1

Description

This work shall include the complete cleanout of existing culvert pipes of all sediment and buildup of material.

Construction

Remove all silt, solids and debris from the culvert pipe. Provide erosion control measures as called for on the plans or as directed by the Engineer to be paid for separately. Dispose of all materials collected in accordance with Subsection 205.03.P of the 2020 MDOT Standard Specifications for Construction.

Any damage caused to the ditch resulting from the Contractor’s removal method will be repaired at the Contractor’s expense.

Measurement and Payment

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

Pay Item	Pay Unit
Culvert Cleanout	Foot

“Culvert Cleanout” will be measured by length in feet for any size pipe or portions of pipe and shall include the disposal of all material off the project site. Culvert end sections will be included in the measurement of length cleaned. The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified.

Only culverts authorized by the Engineer for cleaning will be eligible for payment.

Cleanout of material outside the limits of the culvert will be measured and paid for as Ditch Cleanout, Modified. Where the item of Ditch Cleanout, Modified has not been provided in the contract, this work will be measured and paid for as Misc Culvert Cleanout. Turf Restoration of these areas will be paid for separately.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
SUBGRADE UNDERCUTTING

1 of 1

Description

This work shall be as specified in Section 205 of the 2020 MDOT Standard Specifications for Construction except as modified herein.

Construction

The first paragraph in Subsection 205.03.E.1 titled “Limits of Subgrade Undercutting” shall be revised to read as follows:

“After the subgrade has been excavated to the approximate grade and the underdrains are in place, the Engineer will inspect the grade to determine if any subgrade undercutting is required and will determine the limits of such undercutting. The subgrade may be inspected prior to the placement of the underdrains, as determined by the Engineer.”

Subgrade Undercutting Type IV: “Subgrade Undercutting Type IV” shall be done in accordance with “Subgrade Undercutting Type II”. Backfill Subgrade Undercutting Type IV with 21AA dense-grade aggregate.

Measurement and Payment

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

Pay Item	Pay Unit
Subgrade Undercutting, Type____, Modified	Cubic Yard

The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
EROSION CONTROL, STONE FILTER

1 of 1

Description

This work shall consist of the construction, maintenance and removal of a stone filter in the locations shown on the plans, or as directed by the Engineer, all in accordance with Section 208 of the 2020 MDOT Standard Specifications for Construction, MDOT Standard Plan R-96 Series, Wayne County Standard Plans E series and current Michigan Department of Environmental Quality (MDEQ) soil erosion and sedimentation control procedures.

Construction

Erosion Control, Stone Filter: The Stone Filter shall be constructed in accordance with the details shown on the Wayne County Standard Plan for “Stone Filter at Structure” immediately after the backfilling and grading adjacent to the drainage structure is completed. The number of sides of the filter may vary depending upon the location and type of intake structure.

Any accumulation of sediment affecting the efficient operation of the erosion control shall be removed and stockpiled in a stabilized area so as to prevent the material from eroding back into the drainage course.

After vegetation or a permanent lining has been successfully established in the ditches or swales, the Stone Filter shall be removed and the area formerly occupied by the filter shall be sodded or riprapped as called for on the plans or as directed by the Engineer.

Measurement and Payment

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

Pay Item	Pay Unit
Erosion Control, Stone Filter at Structure	Each

The contract unit price shall be payment in full for furnishing all materials, labor and equipment required to complete the work as specified, including installing, maintaining and removing each unit and the removal and disposal of accumulated sediment.

The sod or riprap to restore the area after the removal of the erosion controls will be measured and paid for separately.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
BIO – SWALE CONSTRUCTION

OHM/mrl

1 of 1

9-06-22

a. Description - This work shall be done in accordance with Sections 302, 303, 308, and 404 of the 2020 Standard Specifications for Construction, except as specified herein. The item, **Bio - Swale Construction** include all work to construct the bio-swale shown at the locations on the plans and typical sections, once the grade has been cut to shape the bio - swale.

b. Construction Methods.

The bio-swale shall be constructed per the typical section in the construction plans. Included in the cost of this item is:

1. 6 inches of open graded aggregate MDOT 34R (Pea stone) in a trapezoidal shape
2. Geotextile Separator encompassing the bio-swale trapezoidal trench to a depth on 1.5 feet which meets MDOT geotextile separator material specifications.
3. 1.5 feet of open graded aggregate MDOT 6A
4. 6” perforated plastic underdrain meeting MDOT Subgrade Underdrain specifications

Not included in this item of work is the excavation or embankment required to construct the bio-swale shape, any storm sewer below the bio-swale, any catch basin or manhole structures in the bio-swale, any required check dams, and any surface restoration. All these items of work shall be measured and paid for under separate items of work.

A minimum of a 24-inch overlap is required along all edges and splices of the geotextile fabric.

c. Measurement and Payment. The completed work for Bio-swale will be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Bio-Swale Construction.....	Foot

Bio-Swale Construction will be measured by length in feet along the centerline of the bio-swale and shall be built to the width as shown in the typical sections and include all labor, material described above, and equipment to perform the work.

WCDPS
(08-27-2021)

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
AGGREGATE BASE
1 of 2**

Description

This work shall consist of furnishing and placing an aggregate base course on a prepared subgrade, subbase, or existing gravel roadway as shown on the plans and as directed by the Engineer. The work shall be in accordance with the provisions of Section 302 of the 2020 MDOT Standard Specifications for Construction and as herein amended.

Materials

The materials shall be 21AA stone, gravel, slag, or crushed concrete, as specified in Section 902 of the 2020 MDOT Standard Specifications for Construction except as modified herein.

Slag shall be blast furnace slag only.

Crushed concrete shall contain only negligible amounts of steel reinforcing and shall be free of other contaminating material. In addition, bituminous material content shall not exceed 3 percent by weight.

Construction

The subgrade and/or existing roadway surface shall be established so that the compacted depth of the aggregate base course is of the minimum thickness and cross-section(s) as shown on the plans.

When Aggregate Base Course will be placed on an existing aggregate base course, the existing aggregate shall be conditioned in accordance with Subsection 302.03.B.

Measurement and Payment

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

Pay Item	Pay Unit
Aggregate Base, Conditioning, Modified	Square Yard
Aggregate Base, CIP	Cubic Yard
Aggregate Base, _____ inch, Modified	Square Yard

The contract unit price shall be payment in full for furnishing all materials, labor and equipment for placing and compacting the aggregate base course to the neat lines shown on the plans or as directed by the Engineer.

AGGREGATE BASE

When Aggregate Base Course is paid for in square yards, the payment will be for the minimum depth called for in the pay item. Any increased thickness due to varying cross-section slopes will not be paid for separately. The transverse dimension for payment will be measured at the midpoint of the 1:1 slope shown on the Typical Cross-Section(s).

Any additional aggregate, or manipulation of aggregate, needed to provide temporary access to street returns, residential drives or commercial drives required as part of staged construction, part width construction, or gapping operations shall not be paid for separately, but shall be included in the unit price of the Aggregate Base Course being placed.

Any earth excavation required in the placement of aggregate base course for driveways shall be included in the Aggregate Base items. Backfill adjacent to the drives shall be material which meets the approval of the Engineer and shall be included in the cost of the project Turf restoration pay items.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
MAINTENANCE AGGREGATE, 21AA

1 of 2

Description

This work shall consist of constructing a temporary aggregate base and/or surface course in sewer trench areas across pavements and other construction areas, as directed by the Engineer.

Materials

The materials shall meet the requirements for Class 21AA Aggregates in Section 902 of the 2020 MDOT Standard Specifications for Construction and as specified herein.

The materials shall be stockpiled on the project site in a location approved by the Engineer, and only in sufficient quantities to meet emergency needs. The entire contract quantity shall not be stockpiled on the project site. As the project approaches completion, deliveries of the materials may be based on a maximum load of approximately 5 cubic yards.

Construction

The temporary aggregate base and surface courses shall be constructed in accordance with Sections 302 and 306 of the 2020 MDOT Standard Specifications for Construction, except that the compaction may be done with a vibratory compactor, roller or other approved construction equipment. The base course may be constructed in one layer, as directed by the Engineer.

Should chemical additives be required to obtain compaction or as a dust palliative, they shall be added to the maintenance aggregates as they are placed.

Measurement and Payment

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

Pay Item	Pay Unit
Maintenance Aggregate, 21AA	Ton

The contract unit price shall be payment in full for all labor, equipment and materials required to place, compact and maintain the aggregate in the locations shown on the plans, or as directed by the Engineer.

MAINTENANCE AGGREGATE, 21AA

The work will be reported and paid for as it is required on the project.

Any chemical additives required shall be included in “Maintenance Aggregate, 21AA”.

Any costs incurred by the County for maintaining the aggregate base and/or aggregate surface, as herein specified, as a result of the Contractor’s failure, for any reason, to follow the Progress Schedule, will be billed to the Contractor.

Maintenance Aggregate, 21AA shall NOT be used to provide temporary access to street returns, residential drives or commercial drives as part of stage construction or pavement gapping operations.

Any additional aggregate, or manipulation of aggregate, needed to provide temporary access to street returns, residential drives or commercial drives required as a part of staged construction, part-width construction, or gapping operations shall not be paid for separately, but shall be included in the unit price of the Aggregate Base Course being placed.

**WCDPS
(08-27-2021)**

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
AGGREGATE SURFACE COURSE**

1 of 2

Description

This work consists of constructing a surface course of 22A Aggregate on a prepared subgrade, on a base course of 21AA Aggregate, or on an existing aggregate surface as shown on the plans. The work shall be in accordance with the applicable provisions of Section 306 of the 2020 MDOT Standard Specifications for Construction and as specified herein.

Materials

The material used shall be gravel meeting the requirements specified for 22A Dense-Graded Aggregate in Section 902 of the 2020 MDOT Standard Specifications for Construction, except that crushed concrete will not be permitted.

Construction

The 22A Aggregate shall be placed and compacted in accordance with the applicable provisions of Section 306 of the 2020 MDOT Standard Specifications for Construction and as specified below.

Where 22A Aggregate is to be placed over an existing aggregate surface, the existing aggregate surface shall be scarified to a depth of 2 inches. New aggregate shall be deposited in areas designated by the Engineer. The existing aggregate and the new aggregate shall then be combined by grading and shaping, as required, to construct the surface course in conformance with the grades, lines and typical cross-sections shown on the plans. Any unsuitable soil or material, including material retained on a 3 inch sieve, shall be removed and replaced with acceptable material.

Calcium chloride, if required by the Engineer, shall not be admixed, but shall be combined with the aggregate by applying to the surface. Calcium chloride will not be required where slag aggregates are used.

Measurement and Payment

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

20WC306(A)

AGGREGATE SURFACE COURSE

Pay Item	Pay Unit
Aggregate Surface Cse, _____ inch, Modified	Square Yard
Aggregate Surface Cse, Modified	Cubic Yard
Aggregate Surface Cse, Modified	Ton

“Aggregate Surface Cse_,” will be measured by area in square yards for the thickness specified, by volume in cubic yard or by weight in ton, of new aggregate actually placed and compacted in accordance with the details shown on the plans, as specified herein and as directed by the Engineer. The contract unit price shall be payment in full for furnishing all materials including calcium chloride, labor and equipment required to complete the work as specified. The work shall include the preparation of the existing gravel surface which is to receive the new aggregate.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
AGGREGATE SHOULDER AND APPROACH

1 of 2

Description

This work shall consist of constructing aggregate shoulders and approaches on a prepared subgrade or on an existing aggregate surface as shown on the plans. This work shall be in accordance with the provisions of Section 307 of the 2020 MDOT Standard Specifications for Construction except as herein specified.

Calcium chloride, if required by the Engineer, shall not be admixed but shall be combined with the aggregate by applying it to the surface in accordance with the applicable provisions of Section 812 and Subsection 922.12 of the 2020 MDOT Standard Specifications for Construction for dust palliative.

Materials

The materials shall be 23A Limestone as specified in Section 902 of the 2020 MDOT Standard Specifications for Construction or 22X Aggregate meeting the requirements herein specified.

22X Aggregate shall consist of slag which shall conform to the grading and physical requirements specified herein. Slag shall consist of clean, tough, durable pieces of air-cooled steel furnace slag, reasonably uniform in density and quality. It shall contain no un-hydrated lime. It shall be reasonably free from iron and brick bats. The material shall be deposited in such a manner as to prevent it from segregating by falling over the sides of the stockpile. The aggregate shall be loaded from stockpiles in such a way as to obtain a material having a uniform grading.

22X Aggregate shall meet the following grading requirements:

% Passing 1" Sieve.....	100
% Passing ¾" Sieve.....	90-100
% Passing 3/8" Sieve	60-90
% Passing No. 8 Sieve	20-50
% Loss by Washing.....	3-10

Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

AGGREGATE SHOULDER AND APPROACH

Pay Item	Pay Unit
Shld, Cl I, ____ inch, Modified	Square Yard
Approach, Cl I, ____ inch, Modified.....	Square Yard

The contract unit price shall be payment in full for furnishing all materials including calcium chloride, labor and equipment required to complete the work as specified.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DRAINAGE STRUCTURE RECONSTRUCT

1 of 2

Description

This work shall be in accordance with Section 403 of the 2020 MDOT Standard Specifications for Construction, Wayne County Standard Plans D Series, and as specified herein. This item shall include all manhole, catch basin, gate well and inlet structures which are raised, lowered or repaired a vertical height in excess of the 12 inches provided for under the Wayne County Special Provisions for “Structure Cover Adjusting” and “Adjust Sanitary Structure Cover”. The work under the item of “Reconstruct Structure” does not include the final 12 inches of adjustment.

Construction

Where called for on the plans or as authorized by the Engineer, existing structures shall be reconstructed to the required line and elevation to conform to the details on the Wayne County Standard Plans D Series. Where the structure is in need of repair or re-corbelling, as determined by the Engineer, it shall be broken down and rebuilt with new materials to the required elevation. Any portion of the structure damaged beyond the limits of reconstruction called for on the plans or authorized by the Engineer shall be removed and replaced at the Contractor's expense. The removal and replacement of adjacent pavement curb or sidewalk shall be considered as included in the adjustment of the structure.

Structures in paved areas, shoulders, driveways, and where the edge of excavation is within 3 feet of the pavement shall be backfilled with Porous Backfill Class III Modified. Compact each layer to 95% of the maximum unit weight to within 1 ½ feet of the finished grade. Backfill remaining 1½ feet with suitable excavated material as approved by the Engineer.

All catch basins, manholes, gatewells and inlets shall be kept thoroughly cleaned of silt, debris and foreign matter and shall be free from such accumulations at the time of final acceptance.

Measurement and Payment

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

DRAINAGE STRUCTURE RECONSTRUCT

Pay Item

Pay Unit

Dr Structure ReconstructFoot

“Dr Structure Reconstruct” will be measured by vertical height in feet, to the nearest 0.1 foot, for that portion of the structure reconstructed between the lowest elevation of masonry removed and the final top of masonry or concrete in excess of the final 12 inches of adjustment.

This work shall include furnishing the materials and for all necessary excavation, backfilling, disposal of surplus material, cleanout and reconstructing the structure to the required elevation.

The adjustment of the structure with its cover will be paid for separately as “Dr Structure Cover, Adj”.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DRAINAGE STRUCTURES

1 of 2

Description

This work shall be in accordance with Section 403 of the 2020 MDOT Standard Specifications for Construction, except that construction details of the structures and cover and backfilling requirements shall be as shown on Wayne County Standard Plans D Series, the applicable MDOT Standard Plans referenced therein, and as stated herein.

Materials

The material shall be placed by the Controlled Density Method, Subsection 205.03.H.4.a of the 2020 MDOT Standard Specifications for Construction, or other effective means having the approval of the Engineer, compact to 95 percent of Maximum Unit Weight.

Testing

See the requirements for testing in the Wayne County Special Provision for Materials Acceptance.

Construction

Subsection 403.03.A.7 is hereby deleted and replaced with the following:

Backfilling may be staged to follow the construction progress of the structure; however, backfilling around structures shall not begin any sooner than 12 hours after the structure has been completed, except precast structures which may be backfilled immediately. In all cases, structures shall be approved by the Engineer prior to backfilling. The backfill material shall be deposited evenly around the structures as follows:

Structure excavations under road surfaces, pavement, shoulders, sidewalk, curb, driveways, and where the edge of the excavation is within 3 feet of the pavement shall be backfilled entirely with Porous Backfill Class III Modified, unless otherwise shown on the plans.

All other structure excavations shall be backfilled to within 1½ feet of finished grade. Compact remaining 1½ feet of backfill shall be suitable excavated material as approved by the Engineer compacted to 90 percent of Maximum Unit Weight”

DRAINAGE STRUCTURES

Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	Pay Unit
Mh (<u>type</u>), _____ inch dia, Cover (<u>type</u>)	Each
Catch Basin A, Cover (<u>type</u>)	Each
Inlet A, Cover (<u>type</u>)	Each

These pay items shall include all labor, materials and equipment required to complete the work as specified.

Covers will not be paid for separately but shall be included in the cost of the structure.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
SANITARY STRUCTURE COVER ADJUSTING

WCDPS
(08-27-2021)

1 of 4

Description

This work shall consist of adjusting sanitary sewer manhole covers in accordance with the details included in the Wayne County Standard Plan D19 for “Adjusting Sanitary Structure,” as herein provided and as directed by the Engineer.

Materials

Masonry Units: Concrete brick shall conform to the requirements of ASTM C 55. Concrete block shall conform to the requirements of ASTM C 139 and Subsection 913.05 of the 2020 MDOT Standard Specifications for Construction.

Mortar: Mortar for unit masonry shall conform to the requirements of Type R-2 mortar as specified in Section 702 of the 2020 MDOT Standard Specifications for Construction.

Manhole Frames and Covers: Regulatory Agencies shall specify replacement frames and covers. Where no local specifications exist, replacement frames and covers shall be bolted, waterproof, cast iron covers with frames equal to East Jordan No. 1040 with pressure tight cover, or Neenah No. R-1916-F1 with pressure tight cover, or approved equal.

Concrete Grade Rings: Precast concrete grade rings shall be in conformance with ASTM C 478 and shall be reinforced with a minimum compressive strength of 4,000 psi at 28 days.

Elastic Joint Seal: The exterior joint between the manhole frame and the brick, block or grade ring adjustment section (chimney) shall be sealed by using any of the following materials or approved equal:

- A. Polyurethane joint sealant.
- B. Butyl rubber joint sealant.

Bond Breaker Tape: A 2 inch to 3 inch wide bond breaker tape shall be applied completely around the manhole circumference and centered over the mortar joint between the manhole frame and the chimney or cone. Bond breaker material shall be polyethylene tape with one side having an adhesive that will readily adhere to ductile and cast iron and concrete masonry. The other side shall be treated or coated so as to positively prevent a bond with the elastomeric waterproofing sealer. Bond breaker shall be compatible for use with the sealer and shall be as furnished or recommended by the elastomeric waterproofing sealer supplier.

Elastomeric Sealant: The exterior of the frame/chimney section shall be sealed by using the following material or approved equal. The elastomeric sealant used shall be chemically

SANITARY STRUCTURE COVER ADJUSTING

compatible with the elastic joint seal utilized according to the manufacturer's recommendations.

- A. Butyl rubber joint sealant.

Geomembrane: The elastomeric sealant shall be covered with any of the following materials or approved equal. However, the geomembrane used shall be chemically compatible with the elastomeric sealant. The covering shall be applied as a bag or a sheet wrapped around the manhole in a continuous manner from frame to cone with seams bonded with waterproof tape.

- A. PVC Geometric, 15 mil in thickness, Staff Industries.
- B. Double layer of 6 mil thick polyethylene wrap.

Construction

Adjust Sanitary Structure is applicable where the existing frame and cover (or new frame and cover furnished by the local authority) shall be reset regardless of location.

Adjust Sanitary Structure, Furnish Cover is applicable where the existing frame and cover will be replaced with a frame and bolt down cover furnished by the Contractor.

- A. Saw cut full-depth and remove pavement for a minimum opening of 4 feet × 4 feet (where applicable). Excavate to a depth 6 inches below top of cone (minimum).
- B. Remove frame and defective bricks or chimney to top of cone (or as directed by the Engineer).
- C. Clean old mortar from top of brick, grade ring or cone, and exterior of chimney (as directed by the Engineer).
- D. Replace defective bricks or rebuild chimney.
- E. Plaster coat with ½ inch Type R-2 Mortar to top brick.
- F. Set frame with Type R-2 Mortar, forming ½ inch recess at exterior flange. Fill recess with elastic joint sealer.
- G. Seal chimney section with elastomeric sealer.
- H. Cover with geomembrane.

SANITARY STRUCTURE COVER ADJUSTING

- I. Structures in paved areas, shoulders, driveways, and where the edge of excavation is within 3 feet of the pavement shall be backfilled entirely with bank-run sand meeting the requirements for Porous Backfill Class III Modified (95% compaction).

All other structure excavations shall be backfilled with Porous Backfill Class III Modified (95% compaction) to within 1 ½ feet of finished grade. The remaining 1½ feet of backfill shall be suitable excavated material as approved by the Engineer (90% compaction).

- J. For structures in concrete pavement, the adjacent pavement and curb shall be replaced to the required elevation with Grade P-NC concrete with mid-range water-reducer. Prior to placing the concrete, epoxy-anchored lane ties shall be placed in the existing pavement adjacent to the opening. They shall be placed on 18 inch centers (no less than 2 epoxy-anchored lane ties per side) at ½ the thickness of the existing pavement.

For structures outside of paved areas, restore surface with topsoil and seed/sod.

Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	Pay Unit
San Structure Cover, Adj	Each
San Structure Cover, Adj, Furn Cover.....	Each

The contract unit price shall be payment in full for furnishing all materials, labor and equipment necessary to complete the work as specified.

The full-depth sawcutting, removal of pavement, curb or sidewalk and the replacement in kind, and the installation of epoxy-anchored lane ties will not be paid for separately but shall be included in these pay items.

All excavation, backfilling, restoration and disposal of surplus and cleanout materials will not be paid for separately but shall be included in these pay items.

The existing frame and/or cover may be required (or requested by the local authority) to be replaced. The new frames and covers will be furnished to the Contractor by the local

SANITARY STRUCTURE COVER ADJUSTING

authority on an exchange basis at the project site. The Contractor shall have the responsibility of contacting the local municipality and/or the DWSD regarding which castings are to be replaced.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DRAINAGE STRUCTURE COVER ADJUSTING

WCDPS
(08-27-2021)

1 of 3

Description

This work shall consist of the raising or the lowering of drainage and gateway structure covers to meet the required elevation as shown on the plans or as directed by the Engineer. All work shall be in accordance with the applicable provisions of Section 403 of the 2020 MDOT Standard Specifications for Construction, Wayne County Standard Plans D Series, and as herein provided.

All other utility structures will be adjusted by the utility owner.

Construction

General: The work included in this item shall provide for a change in elevation of a structure cover of up to 12 inches, as measured vertically from the top of the masonry or concrete structure, and shall include repairs to the existing structure within these limits.

The cover shall be raised to the proper elevation by supporting it on brick masonry or precast adjusting rings, so constructed as to hold it firmly in place, or lowered to the proper elevation and reset on a full mortar bed.

The Contractor shall remove any material deposited in the structure as a result of structure adjustment.

Structures in Pavement/Sidewalk Areas: Where called for on the plans, or as directed by the Engineer, adjacent pavement, curb or sidewalk shall be removed to provide a 4 foot × 4 foot minimum opening in order to adjust the casting. The removal procedure shall include full depth saw cutting and shall be done in such a manner that the adjacent pavement/sidewalk structures are not damaged. Any damage occurring to adjacent pavements (e.g., sidewalk, paved maintenance strips, drives, ramps, etc.) during pavement removal shall be replaced in kind at the Contractor's expense.

The adjacent pavement and curb shall be replaced to the required elevation with Grade P-NC concrete with mid-range water-reducer. Prior to placing the concrete, epoxy-anchored lane ties shall be placed in the existing pavement adjacent to the opening. They shall be placed on 18 inch centers (no less than 2 epoxy-anchored lane ties per side) at ½ the thickness of the existing concrete pavement or concrete base.

The Contractor shall schedule his work so that all pavement removed for the structure adjustment shall be replaced and debris removed by the end of the work day.

DRAINAGE STRUCTURE COVER ADJUSTING

Structures Outside of Pavement Areas: The area adjacent to structures being adjusted outside of pavement areas shall be restored in kind with topsoil and sod or seed, as approved by the Engineer.

Backfilling: Structures in paved areas, shoulders, driveways, and where the edge of excavation is within 3 feet of the pavement shall be backfilled entirely with bank-run sand meeting the requirements for Porous Backfill Class III Modified (95% compaction).

All other structure excavations shall be backfilled with Porous Backfill Class III Modified (95% compaction) to within 1 ½ feet of finished grade. The remaining 1½ feet of backfill shall be suitable excavated material as approved by the Engineer (90% compaction).

Structure Repairs: Where the structure is in need of repair, as determined by the Engineer, within the limits provided for herein, it shall be broken down and rebuilt with new materials to the required elevation. Any portion of the structure damaged by the Contractor's operations beyond the limits of repair, as provided for herein, shall be removed and replaced at the Contractor's expense.

Structure Cleanout: Included in the work shall be the removal of all dirt, debris, deposits or hardened concrete regardless of the original source, the quantity involved, the material makeup or the fact that the condition pre-existed at the time of project startup. This shall include all structure sumps. Removal of all debris from the structure shall be done only at the end of the project, at the direction of the Engineer. The removal of the debris and the disposal of the waste generated shall be in accordance with Subsection 403.03.G.

Detroit Water and Sewerage Department (DWSD) Manholes: These manholes must be adjusted to DWSD standards. DWSD will supply new frames and covers if found necessary by DWSD. Any frames or covers broken by the Contractor shall be replaced at the Contractor's expense. The Contractor shall notify the Field Office of DWSD (phone: 313-833-4682) at least three (3) working days in advance of starting construction.

Measurement and Payment

The completed work as described, will be measured for STRUCTURE COVER ADJUSTING will be paid for at the contract unit price for the following contract items (pay items):

Pay Item	Pay Unit
Dr Structure Cover, Adj	Each
Dr Structure Cover, Adj, Furn Cover (type).....	Each

DRAINAGE STRUCTURE COVER ADJUSTING

The contract unit price shall be payment in full for furnishing all materials, labor and equipment necessary to complete the work as specified. When “Furnish Cover” is called for, the specified casting’s cover and frame are included in the pay item.

The full depth saw cutting, the removal of pavement, curb or sidewalk and the replacement in kind (including epoxy-anchored lane tie installation) will not be paid for separately but shall be included in these pay items.

All excavation, backfilling, restoration and disposal of surplus and cleanout materials will not be paid for separately but shall be included in these pay items.

The existing gatewell castings may be required to be replaced with new manhole-type frames and covers. The new frames and covers will be furnished to the Contractor by the local authority on an exchange basis at the project site. The Contractor shall have the responsibility of contacting the local municipality and/or the DWSD regarding which castings are to be replaced.

Wayne County Department of Public Services
WCDPS
(08-27-2021)
SPECIAL PROVISION
FOR
STORM WATER POLLUTION CONTROL UNIT

1 of 9

Description

This work shall be in accordance with the applicable provisions of Sections 403 and 706 of the 2020 MDOT Standard Specifications for Construction, the notes and details shown on the plans and as herein provided.

Storm Water Pollution Control (SWPC) Units, also known as Manufactured Treatment Systems, are manmade devices or structures that are used to remove sediment and other particulate matter from storm water runoff. The Manufacturer of each SWPC Unit must be selected from the current approved list of Manufacturers from Table 8.2.3-1 in Section 8.2.3 of the Wayne County Storm Water Management (Ordinance) Standards Manual, as amended. The current approved list can be found by contacting the Wayne County Permit Office at 734-595-6504 or by pasting the following link into your web browser (http://www.waynecounty.com/doe_wqm_res_stormwm_standards.htm).

Design and Performance

SWPC units shall be designed to treat up to the peak flow rate based on a 10-year storm event. Each SWPC Unit shall have performance specifications to meet the Design Treatment Capacity listed in the pay item name.

Each SWPC Unit shall be of hydraulic design that includes flow controls designed and certified by a professional engineer using accepted principles of hydraulics and fluid mechanics that raise the water surface inside the unit to a pre-determined level in order to prevent re-suspension of sediment and trap floating contaminants.

Each SWPC Unit shall be capable of removing 80% of the net annual Total Suspended Solids (TSS) load based on 75-micron (and smaller) particle size. Individual SWPC Units shall not re-suspend trapped sediments or re-entrain floating contaminants at flow rates up to and including the specified Design Treatment Capacity.

Each SWPC Unit shall have sufficient sediment storage capacity. The system pump-out volume shall be less than ½ of the total system volume. The systems shall be designed to not allow surcharge of the upstream piping network during dry weather conditions.

A water-lock feature shall be incorporated into the design of the SWPC Unit to prevent the introduction of trapped oil and floatable contaminants to the downstream piping during routine maintenance and to ensure that no oil escapes the system during subsequent storm events.

STORM WATER POLLUTION CONTROL UNIT

Direct access shall be provided to the sediment and floatable contaminant storage chambers to facilitate maintenance. There shall be no appurtenances or restrictions within them which would prohibit removal of accumulated sediment and debris during maintenance. Where the depth from top-of-casting to the top of the SWPC Unit exceeds four (4) feet, access to the sediment chamber shall consist of a cone varying from two (2)-foot to four (4)-foot diameter, and 4-foot diameter riser sections, with a 36-inch minimum opening through the top of the unit. Concrete cone and riser sections shall have steps installed in accordance with Wayne County Standard Plan D1, starting two feet from top-of-casting, spaced every 15-18 inches. Access into units without concrete cones and risers shall be with an approved ladder or as recommended by the Manufacturer meeting MIOSHA safety requirements.

The installed SWPC Unit (manufactured unit and surrounding soil structure) must sustain an HS20 loading as determined by a licensed Professional Engineer.

The minimum cover of backfill material should be recommended by the manufacturer and approved by the Engineer.

Materials

SWPC Units may be constructed from precast or cast-in-place concrete or other materials approved by Wayne County and shall meet the following specifications:

- For SWPC Units made of pre-cast or cast-in-place concrete:
 - Concrete for precast units shall conform to ASTM C857 and C858.
 - Cement shall be Type II Portland cement conforming to ASTM C150.
 - Units constructed from pre-cast concrete shall be manufactured in accordance with ASTM C 478.
 - Sections shall be cured by an approved method and shall not be shipped until (1) at least 5 days have passed since fabrication and/or repair, and the concrete has attained a compressive strength of 4,000 psi.
 - Cast-in-place concrete shall be constructed in accordance with Section 706.03 of the 2020 MDOT Standard Specifications for Construction.
 - Sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C 990.
 - The wall thickness shall be as shown on the dimensional drawings but not less than 6 inches. In all cases the wall thickness shall be no less than the minimum

STORM WATER POLLUTION CONTROL UNIT

thickness necessary to sustain HS20 loading requirements as determined by a licensed Professional Engineer.

- Pipe openings shall be sized to accept pipes of the specified size(s) and material(s), and shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C 595M, or sealed as recommended by the Manufacturer and approved by the Engineer (approved fittings or boots).
 - Internal aluminum plate components shall be aluminum alloy 5052-H32 in accordance with ASTM B 209.
 - Sealant to be used at the base of the swirl chamber shall be 60 durometer Buna N (nitrile butadiene rubber) Extruded Sealant, extruded EPDM, or approved equal.
 - A bitumen sealant in conformance with ASTM C 990 shall be utilized in affixing (and sealing) the aluminum swirl chamber to the concrete vault at the long wall tangent points.
 - Brick or masonry used to build the manhole frame to grade shall meet the requirements of Section 913 of the 2020 MDOT Standard Specifications for Construction.
 - The access cover for the units shall be Frame and Cover “A” according to Wayne County Standard Plans, D series.
- For SWPC Units (including smooth bubble and weir plates) fabricated from high density polyethylene (HDPE):
- Virgin HDPE material shall be used, conforming to the minimum requirements of cell classification 424420C (4 inch – 10 inch diameter) and 435440C (12 inch – 60 inch diameter) per ASTM C 3350.
 - The virgin HDPE material shall be evaluated using the notched constant ligament-stress (NCLS) test as specified in Section 9.5 and 5.1 of AASHTO M294 and ASTM F2306.
 - Weir and baffle plates shall be welded at all interfaces between the plate and water quality unit.
- For SWPC Units fabricated from corrugated polyethylene pipe (CPE):
- The unit and all required fittings shall conform to AASHTO M294 Type S.

STORM WATER POLLUTION CONTROL UNIT

- Fittings and couplings must be non-corrugated, solid sleeve fabricated from polyethylene with a gasket on both sides of the joint.
- Split collar couplers are not allowed.
- Weir and baffle plates shall be welded at all interfaces between the plate and water quality unit.

Shop Drawings

Shop drawings will not be required if the SWPC Unit is selected from the current approved list of Manufacturers from Table 8.2.3-1 in Section 8.2.3 of the Wayne County Storm Water Management (Ordinance) Standards Manual, as amended, and constructed in accordance with the detailed plans on file with the Wayne County Permits and Wayne County Testing Offices and as specified herein. However, installation procedures recommended by the Manufacturer shall be furnished to the Engineer for all Units to be installed. If any part of the SWPC Unit is modified from the detailed plans on file, or if the Unit is a unique size or Model number currently not on file, then shop drawings will be required as specified below.

The Contractor shall initially submit two (2) sets of detailed shop drawings for the proposed structures to the Engineer for approval. The shop drawings shall include the details of the physical dimensions, reinforcement details, joints, any cast-in-place appurtenances and recommended installation procedure. Shop drawings must be sealed by a licensed Professional Engineer registered in the State of Michigan and shall be annotated to indicate all materials to be used and all applicable standards for materials, required tests of materials and design assumptions for structural analysis. Shop drawings shall be prepared at a scale of not less than 3/16-inches per foot (1:75).

If the shop drawings are “not approved” by the Engineer, the Contractor shall have revised shop drawings made and then submit two (2) sets of revised shop drawings to the Engineer for approval. This procedure shall continue until the shop drawings can be “approved” by the Engineer. Once the shop drawings can be “approved” or “approved except as noted,” the Contractor shall submit five (5) additional sets of shop drawings to the Engineer, for a total of seven (7) “approved” sets of shop drawings.

Fabrication shall not begin until written approval of the shop drawings has been received from the Engineer.

Quality Control Inspection and Testing

The Manufacturer shall contact the Wayne County Testing Office a minimum of 72 hours (3 working days) prior to the start of fabrication. The Manufacturer shall provide the Testing

STORM WATER POLLUTION CONTROL UNIT

Office with approved shop drawings, or the Manufacturer's name and model number from the Wayne County approved list, prior to inspection and all material certifications prior to fabrication.

The Manufacturer shall follow the procedures and instructions of the Wayne County Testing Office; keep accurate inventory and use shipping tickets (provided by Wayne County) with all required information.

The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer or his representative.

Inspections may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections which have been damaged beyond repair during delivery will be rejected and, if already installed, shall be repaired to the Engineer's acceptance level, if permitted, or removed and replaced, entirely at the Contractor's expense.

All sections shall be inspected for general appearance, dimensions, soundness, integrity, etc. The surface shall be dense, close textured and free of blisters, cracks, roughness, deformation and exposure of reinforcement.

Imperfections may be repaired, subject to the acceptance of the Engineer, after demonstration by the Manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance.

HDPE units shall be protected from the sun at all times.

Repairs

Precast sections may be repaired, if necessary, because of imperfections in manufacture or handling damage and will be acceptable if, in the opinion of the County, the repairs are sound, properly finished and cured, and the repaired section conforms to the requirements of the specifications. No patching will take place without prior approval of the Engineer.

Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at the end of seven (7) days and 5,000 psi at the end of 28 days when tested in 3 inch diameter by 6 inch long cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs.

HDPE or CPE units shall not be repaired on site unless approved by the Engineer.

STORM WATER POLLUTION CONTROL UNIT

Concrete Testing

General: The Manufacturer shall provide, at no expense to the County, all equipment and personnel necessary in order to determine the air content, concrete temperature, slump and compressive strength cylinders/cores for each precast section. The Manufacturer's personnel shall provide these services as directed/witnessed by County personnel. If any of these tests indicate the concrete intended for a precast section does not meet the requirements specified herein, the concrete will be rejected prior to placement in the form. Placement of deficient concrete in the form will result in that precast section being rejected.

Wayne County personnel must inspect and approve the steel mat prior to placement in the form.

Types of Test Specimens: The concrete compressive strength shall be determined from compression tests made on cylinders or cores. For cylinder testing, a minimum of 4 cylinders shall be taken on each production run and shall be done in accordance with ASTM C 39.

For core testing, one core shall be cut from each precast section. Core testing shall be in accordance with ASTM C 497.

Cores and cylinders must be capped with a sulfur-based capping compound.

Acceptability of Core Tests: The compressive strength of the concrete in each group of sections is acceptable when the core test strength is equal to, or greater than, the design concrete strength. When the compressive strength of the core tested is less than the design concrete strength, the precast section from which the core was taken may be recored. When the compressive strength of the re-core is equal to or greater than the design concrete strength, the compressive strength of that precast section is acceptable.

When the compressive strength of any re-core is less than the design concrete strength, the section will be rejected.

Plugging Core Holes: The core holes shall be plugged and sealed by the Manufacturer in a manner such that the section will meet all of the test requirements of this specification. Sections so sealed shall be considered satisfactory for use.

Reason for Rejection: The precast sections shall be subject to rejection for failure to meet any of the specification requirements. Causes for rejection of any precast section shall include, but not limited to, the following:

1. Fractures or cracks passing through the wall.
2. Defects that indicates proportioning, mixing and molding not in compliance with specifications.

STORM WATER POLLUTION CONTROL UNIT

3. Honeycombed or open texture surfaces.
4. Damaged ends, where such damage would prevent making a satisfactory joint.
5. Cracks that, in the opinion of the County, are sufficient in length to warrant rejection.
6. Insufficient compressive strength of concrete.
7. Out of tolerance dimensions.
8. Low/high air content.
9. Insufficient steel area or exposed reinforcing steel.

Construction

General: Each SWPC Unit shall be constructed to accommodate the pipe sizes and the Design Treatment Capacity identified on the plans and in the pay items, and as specified herein. Install at elevations and locations shown on the plans or as otherwise directed by the Engineer.

The installation of all SWPC Units must be observed by the Engineer.

Excavation, Dewatering and Shoring: All excavations shall be in accordance with Section 206.03.A of the 2020 MDOT Standard Specifications for Construction. Dewatering and shoring required to ensure a safe working environment shall be in accordance with the sections titled “Sheeting and Bracing” and “Pumping, Draining and Well-Pointing” of the Wayne County Special Provision for “General Conditions.”

Base Installation for All Materials: Subgrade shall be established as shown on the plans. The subgrade material shall be composed to withstand a design loading of 2,000 pounds per square foot (psf). The excavation of the subgrade shall extend a minimum of 18 inches from the outside walls of the base section for concrete units and a minimum of 24 inches measured on each side from the outside diameter/outside walls or base section for HDPE or CPE units and backfilled with aggregate base as specified in the following paragraph.

The base shall be placed on the compacted aggregate base, elevation confirmed, plumbed and aligned to ensure that the balance of the unit will be properly aligned and situated as assembly of the rest of the pieces proceed. Concrete bases shall be placed on MDOT Class II granular material; and HDPE or CPE units shall be placed on MDOT Class 6A or 34G material; having a minimum thickness of 6 inches after compaction or of greater thickness and compaction if specified elsewhere. The material shall be placed by the Controlled Density Method, Subsection 205.03.H.4.a of the 2020 MDOT Standard Specifications for Construction, or other effective means having the approval of the Engineer, and shall be compacted to 95 percent of Maximum Unit Weight. The granular subbase shall be checked for level prior to setting and units with a rectangular base section shall be checked for level at

STORM WATER POLLUTION CONTROL UNIT

all four corners after it is set. If the slope from any corner to any other corner exceeds 0.5% the base section shall be removed and the granular subbase material re-leveled.

For precast concrete units, prior to setting subsequent sections, place bitumen sealant in conformance with ASTM C 990 along the construction joint in the section that is already in place. Precast sections shall be set in a manner that will result in a watertight joint.

Concrete Structure Installation: For precast SWPC Units, installation shall conform to ASTM C 891 “Standard Practice for Installation of Underground Precast Utility Structures.” Cast-in-place SWPC Units shall be constructed in accordance with the applicable provisions of Section 706.03 of the 2020 MDOT Standard Specifications for Construction. Installation procedures recommended by the Manufacturer, if any, should also be consulted. These procedures shall be furnished to the Engineer for all Units to be installed.

Holes made in the concrete sections for handling or other purposes shall be plugged with a nonshrink grout or by using grout in combination with concrete plugs.

Where holes must be cut in precast sections to accommodate pipes, do all cutting before setting the sections in place to prevent any subsequent jarring which may loosen the mortar joints. The Contractor shall make all pipe connections.

After setting/constructing the roof section, set block/brick or precast concrete manhole riser sections to the height required to bring the manhole covers to grade so that the sections are vertical and in true alignment with a ¼ inch maximum tolerance allowed.

Structure Installation for SWPC Units made of Materials other than Concrete: Installation procedures recommended by the Manufacturer shall be followed. These procedures shall be furnished to the Engineer for all Units to be installed.

Holes made in the unit for handling or other purposes shall be plugged with materials meeting the specification recommended by the Manufacturer for such materials.

Field cutting of the unit to accommodate pipes is not allowed.

Risers that are not constructed from block/brick or concrete shall have a poured concrete collar constructed at the top of the riser sections. The collar shall measure a minimum of 8-foot × 8-foot × 8-inch thick. The concrete shall have a minimum compressive strength of 3,500 psi at 28 days.

High Water Table: When the water table is high, all units must be installed as recommended by the design engineer, otherwise the unit shall be replaced by a unit that can withstand the floating effect.

STORM WATER POLLUTION CONTROL UNIT

Backfill: Upon completion of the SWPC Unit installation, the excavation shall be backfilled as follows:

Precast or cast-in-place concrete units shall be backfilled with MDOT Class II granular material. HDPE or CPE units shall be backfilled with MDOT 6A, 6AA or 34G material.

All backfill materials shall be placed in a balanced manner such that there is no more than a 2 lift differential from one side to the other. Balanced lifts should be advanced across the width of the unit, evenly along the length of the unit throughout the backfilling process. All backfill material shall be placed in lifts of maximum of 10 inches in depth.

For each backfill lift, all materials shall be placed by the Controlled Density Method, Subsection 205.03.H.4.a of the 2020 MDOT Standard Specifications for Construction, or other effective means having the approval of the Engineer, and shall be compacted to 95% of Maximum Unit Weight (90% for MDOT 6A material).

If the unit is installed in a travel way, the upper two feet of backfill shall be 21AA aggregate base compacted to 95% of Maximum Unit Weight. Crushed concrete shall not be permitted at locations specified in MDOT Special Provisions.

For precast units, if leaks appear after backfilling, clean the inside joints and caulk with lead wool to the satisfaction of the Engineer.

Measurement and Payment

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

Pay Item	Pay Unit
Storm Water Pollution Control Unit, _____cfs	Each

The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified, including excavation and backfill. Frames and covers will not be paid for separately but shall be included in the cost of the unit.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
UNDERDRAIN

1 of 2

Description

This work shall be as specified in Section 404 of the 2020 MDOT Standard Specifications for Construction, in accordance with the Wayne County Standard Plan D14 Underdrain, and as specified herein.

Materials

- A. Corrugated Plastic Tubing for underdrain shall meet the requirements of AASHTO M252 for polyethylene (PE) tubing or ASTM F949 for polyvinyl chloride (PVC) tubing. The perforations for both PE and PVC shall conform to AASHTO M252 Class 2 (perforations along the entire circumference) unless otherwise specified.

Corrugated plastic tubing for underdrain is only to be used where the depth from the centerline of the finished grade to the top of the underdrain exceeds 4.0 feet.

- B. Heavy Duty Perforated Polyvinyl Chloride Pipe (PVC-HD) shall conform to the requirements for ASTM D3034 Type SDR23.5 pipe with perforations in accordance with AASHTO M278. The joints tightness requirement shall not apply.
- C. Corrugated Dual Wall High Density Polyethylene (DWHDPPE) Smooth Lined Pipe for underdrain shall meet the requirements of AASHTO M252 Type S with Class 2 perforations. A minimum 12" of cover is required from the top of pipe to the bottom of pavement.
- D. "Shallow" underdrain, as called for in the pay item, is defined as underdrain where the depth from the centerline of the finished grade to the top of the underdrain is 4.0 feet or less.
- E. The aggregate used to backfill all underdrains shall be Granular Material Class I or IIA, Open-Graded Aggregate 34R.
- F. If trench backfill material is Granular Material Class IIAA, the underdrain pipe shall be wrapped with geotextile blanket.

UNDERDRAIN

- G. If trench backfill material is Open-Graded Aggregate 34R, the underdrain trench shall be lined with geotextile blanket as shown on Wayne County Standard D14.
- H. Geotextile Blanket shall meet Section 910 of the 2020 MDOT Standard Specifications for Construction.

Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	Pay Unit
Underdrain, Subgrade, Shallow, _____ inch	Foot
Underdrain, Subgrade, _____ inch, Modified	Foot
Underdrain, Fdn, _____ inch, Modified	Foot
Underdrain Trench Lining	Foot

The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified. The unit price includes the connections to existing underdrains.

The Contractor must use PVC-HD or DWHDPE pipe for the pay item “Underdrain, Subgrade, Shallow, _____ inch.” This item shall be used where the depth from the centerline of the finished grade to the top of the underdrain is 4.0 feet or less.

“Underdrain Trench Lining” will be measured by length of trench in feet. Any varying depth of trench will not be paid for separately. The contract unit price shall be payment in full for furnishing all materials, labor and equipment required to complete the work as specified.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR

TEMPORARY PATCHING
WITH BITUMINOUS MIXTURE

1 of 2

Description

This work consists of temporary pavement patching with a cold bituminous mixture or a hot mix asphalt (HMA) mixture.

Materials

The cold patching mixture or the HMA mixture shall be approved by the Engineer prior to placement. The cold patching mixture shall be composed of an asphaltic binder in combination with a crushed limestone aggregate with the following gradation:

Gradation, % Passing

Sieve ½”	100
Sieve 3/8”	95-100
Sieve #4.....	35-65
Sieve #8.....	0-25
Sieve #200.....	0-4
Bitumen, % by weight	5.5-7.0

Construction

When temporary patching of a pavement surface is required, the surface shall be cleaned. The bituminous mixture shall be compacted so that the patch is flush with the adjacent pavement.

When patching is required for repairing a cut in the pavement, backfilled Maintenance Aggregate base course shall be compacted to not less than 95 percent of the Maximum Unit Weight. A Maintenance Aggregate base course of not less than 9 inch compacted thickness, or a bituminous base of the specified thickness, shall be used.

The top of the Maintenance Aggregate base course shall be 2 inches to 2½ inches below the surface of the adjacent pavement. The compacted surface of the bituminous patch shall be smooth and shall not vary more than ¼ inch from the crown and grade of the adjacent pavement. Any variations over ¼ inch from the established grade shall be corrected.

TEMPORARY PATCHING WITH BITUMINOUS MIXTURE

Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	Pay Unit
Bit Mixture for Patching, Temp	Ton

“Bit Mixture for Patching, Temp” will be measured by weight in tons, or by volume converted to tons, and shall be payment in full for furnishing all material, labor and equipment required to complete the work specified.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
SUPERPAVE HMA MIXTURES AND ACCEPTANCE

1 of 15

Description

This special provision sets forth requirements which include contractor submittals and other basis of acceptance of and payment for furnishing and placing Superpave Hot Mix Asphalt (HMA) paving materials on Wayne County roads in accordance with the current *2020 Michigan Department of Transportation (MDOT) Standard Specifications for Construction* except where modified herein.

Materials

Aggregates: The virgin aggregates used for HMA Mixtures shall consist of gravel, stone, or slag in combination with natural sand, stone sand, or slag sand and shall conform to the grading and physical requirements specified in the *2020 MDOT Standard Specifications for Construction*.

The Blended Aggregate Wear Index (AWI) value for all Top Course Hot Mix Asphalt (HMA) mix designs shall be a minimum of 260 as determined by *Michigan Test Method (MTM) 112-04*.

Aggregates produced from steel furnace slag, reverberatory furnace slag, or crushed concrete shall not be permitted in any HMA mixture except where specified.

Recycled Asphalt Pavement: The Contractor may substitute Reclaimed Asphalt Pavement (RAP) for a portion of the new materials required to produce HMA mixture. The mixture will be designed and produced to meet all the criteria herein.

The RAP shall be placed in a stockpile in accordance with the Engineer's approval, and its use shall be governed by the conditions as specified herein. The stockpile of RAP must be uniform in gradation and asphalt content and be free of contamination such as topsoil, roofing shingles, debris, and foreign material. See Section titled "Superpave HMA Mixtures".

Asphalt Binder: The asphalt binder utilized shall be as indicated in Table 1.

Certification shall be prepared by the supplier and shall consist of a notarized copy of a report covering tests conducted by an approved laboratory. Such tests shall have been conducted on samples obtained from the storage tank or tanks utilized during the term of the project. This certification shall also include a statement that the material represented by the report meets the *2020 MDOT Standard Specifications for Construction* requirements as shown in Section 904.

Polymer Modified Asphalt Binder: Asphalt Binder shall consist of an asphalt cement to which a Styrene Butadiene Styrene (SBS) triblock copolymer without oil extension is added. The asphalt binder, after the addition of the copolymer, shall meet the requirements of a PG 70-22 (P) Binder. The "Misc HMA___ High Stress" shall utilize an asphalt binder, which after the addition of the tri block copolymer, meets the requirements of PG 70-22(P) or PG 76-22(P) as directed in Table 1.

The Polymer Modified Asphalt Cement shall be smooth, homogenous, and comply with the requirements of Table A (Requirements for Styrene Butadiene Styrene (SBS) Modified Binders).

SUPERPAVE HMA MIXTURES AND ACCEPTANCE

Certification for the asphalt cement shall be prepared by the supplier and shall consist of a certified report covering tests conducted by a laboratory with AASHTO accreditation for the required testing. Such tests shall have been conducted on samples obtained from the storage tank(s) utilized during the term of this project. This certification shall also include a statement that the material represented by the report meets the *2020 MDOT Standard Specifications for Construction* requirements as shown in Section 904 and any additional requirements specified herein. Copies of this report will be provided to the Testing Office and Project Engineer.

Asphalt modification at a HMA mixture plant will not be allowed. Air blown asphalts and other modifiers will not be allowed.

The Mix Design submitted by the Contractor shall include the HMA supplier's recommended compaction temperature for laboratory density specimens.

If the Contractor has specific questions on handling, storage, production, application, or rolling of the polymer modified asphalts; they should contact the asphalt supplier directly for information.

TABLE A
Requirements for Styrene-Butadiene-Styrene (SBS) Modified Binders

Test	Asphalt Grade PG 70-22 (P)	Asphalt Grade PG 76-22(P)
Test on Original Binder, ⁽¹⁾		
Separation of Polymer ASTM D5892-96A 163° C, 48 hours (R & B difference between top and bottom), Maximum	2	2
Force Ratio AASHTO T300-95 4° C, 50 mm/min.; 300 mm elongation Minimum	0.3	0.35
Tests on Residue from Rolling Thin Film Oven, ⁽¹⁾		
Elastic Recovery AASHTO T301-95, 25° C 10 mm elongation, and cut Immediately, % minimum	60	70
(1) Report DSR values for G*/sin, and the phase angle at the high-grade temperature on the original and on the RTFO residue for information purposes.		

Bond Coat: The Bond Coat shall be Anionic Emulsified Asphalt SS-1h, as specified in the *2020 MDOT Standard Specifications for Construction*. The Contractor may dilute and thoroughly mix the emulsion with water. The volume of water added shall be approved by the Engineer and shall not exceed the original volume of the emulsion.

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Test samples of the Bond Coat will be obtained to measure the percentage and penetration of asphalt residue in the asphalt emulsion, when used by a third party other than the supplier. These samples will be taken at the discretion of the Engineer not less than one each week or as indicated in the *MDOT Materials Sampling Guide* during the placing of the HMA mixtures. Emulsion samples failing to meet the percent minimum bituminous residue and/or the required penetration of the bituminous residue will be subject to the "HMA Contract Unit Price Adjustments" portion of this Special Provision. When Bond Coat is used by a supplier, acceptance will be by certification.

Superpave HMA Mixtures

General: In cases of non-conformance of any of the requirements as specified herein and if, in the Engineer's judgment, the non-conforming mixture warrants, the Contractor shall remove the nonconforming mixture and replace it with a mixture conforming to the Specification requirements at his own expense, or proceed in accordance with the section titled "HMA Paving Mixtures Subject to Rejection or Penalty" in this Special Provision.

Reclaimed Asphalt Pavement (RAP) Percentages: Superpave mixture types EML, EML High Stress,, EMH and EMH High Stress used as Leveling or Top Course shall be limited to a maximum of 17% RAP binder by weight of the total binder in the mixture.

Mixtures Analysis Data: The Contractor, at least two (2) days prior to production, shall submit to the Testing Laboratory, for the Engineer's approval, a test report containing the following data:

1. The extracted aggregate gradation and asphalt content of the RAP stockpile (minimum one [1] test per 1000 Tons of RAP).
2. Average crushed content and aggregate type (gravel, slag, limestone, etc.) in the RAP stockpile (minimum one [1] test per 1000 Tons of RAP).
3. Desired proportions of RAP and virgin aggregates.
4. The "Proposed Grading" of the final blend of RAP and virgin aggregates shall also include the mixture gradation plotted on a 0.45 power chart. This chart must clearly show control points and the restricted zone as defined in this Special Provision.
5. The Blended Aggregate Wear Index (AWI) value for all Top Course Hot Mix Asphalt (HMA) mix designs.
6. The "Proposed Asphalt Binder Content" of the mixture.
7. The type of asphalt binder to be added to the mixture.
8. The individual and combined bulk specific gravities of all aggregates, including those within the RAP mixture.

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9. The Gmm (Maximum Specific Gravity) of the HMA mixture at the proposed binder content.
10. The Calibration Data, methods and constants for use with the asphalt ignition furnace.
11. Crushed content, fine aggregate angularity, sand equivalent, L.A. abrasion, soft particles, flat and elongated particles.
12. The Superpave mix criteria.
13. HMA Suppliers recommended compaction temperature for laboratory density specimens.
14. The specified temperature of the HMA when applied at the project site.
15. Air voids and VMA correction factors for reheated samples. Obtain a minimum of three samples which will then be split with one portion tested for air voids and V.M.A. immediately (without reheating) per Wayne County methods. The other portion shall be allowed to reach ambient temperature then reheated and tested for VMA and air voids. The average difference of these results will be submitted as the correction factors.

The Voids in Mineral Aggregate (VMA) will be based on the Bulk Specific Gravity of the total mix in accordance with the *Asphalt Institute's Superpave Mix Design Manual (SP2)*.

Trial Run: At the direction of the Testing Engineer, the Contractor will be required to produce and test the mixture prior to placing the HMA on the project. All costs associated with the trial run, including materials and testing will be borne by the Contractor. All test results will be forwarded to the WCDPS Testing Office prior to commencement of the project.

The Contractor will be required to produce the mixture within the tolerances listed for Range 1 in this Special Provision in the section titled "HMA Paving Mixtures Subject to Rejection or Penalty".

The mixture shall not contain clay balls, unmixed lumps, or uncoated particles.

HMA Base Course Mixtures: The "Proposed Grading" must meet the aggregate gradation as specified in Table 902-5, Mixture Number 2 or 3 or as specified by the Engineer.

HMA Binder Course Mixtures: The "Proposed Grading" must meet the aggregate gradation as specified in Table 902-5, Mixture Number 2.

HMA Leveling Course Mixtures: The "Proposed Grading" must meet the aggregate gradation as specified in Table 902-5, Mixture Number 4.

HMA Wedge Course Mixtures: The "Proposed Grading" shall meet the aggregate gradation as specified in Table 902-5, Mixture Number 5.

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HMA Top Course Mixtures: The "Proposed Grading" shall meet the aggregate gradation as specified in Table 902-5, Mixture Number 5.

Equipment

Hot-Mix Storage Bins: The use of hot-mix storage bins will be limited to six (6) hours of storage or, when insulated, storage may be extended up to thirty (30) hours with specific approval of the Engineer.

HMA Plant: All HMA plants supplying material to the project will be inspected and approved by the Wayne County Testing Office prior to production.

Construction Methods

Placing HMA Mixtures

General: All paving lanes shall be completed to approximately the same station at the end of each day. If the longitudinal edge of a paved lane of Top Course is distorted during the day's work by traffic or other means, it shall be trimmed, by the use of a self-propelled concrete saw, to a true line and vertical face prior to placing the abutting lane. Transverse joints shall be carefully constructed and maintained with a vertical face until the placing of additional material against the joint has begun. Corrections to the longitudinal and transverse edges by a method approved by the Engineer will not be paid for separately.

When used in conjunction with pavement surface milling, the placement of HMA Wedge Courses shall take place within two (2) days of the milling operation, or as directed by the Engineer. The Contractor shall schedule the milling operation in such a way that the HMA Wedge Course placement will not be required on Sundays or holidays.

Resurfacing shall not begin in any section of pavement until base repair and curb construction in that section is complete.

Areas of completed HMA Top Course requiring correction for paving irregularities (e.g., "birdbaths") shall be removed by surface milling and replaced with HMA Top Course as directed by the Engineer. Skin patching of irregularities will not be allowed. The removal and replacement of material required to correct irregularities shall not be paid for separately and will be included in the original payment of the HMA Top course material.

For HMA Binder Course, delivery is required to be made by rear end discharge trailers with a live mechanical conveyor feed bottom, such as those manufactured by Flow-Boy, Fruehauf, or Red River. In transporting HMA mixtures, all loads shall be covered.

Subsection 501.03.F.1 paragraph 2 and Subsections a through d of the *2020 MDOT Standard Specifications for Construction*, shall be revised to read: "Pavers will be required to place all HMA mixtures, unless specifically approved by the Engineer."

SUPERPAVE HMA MIXTURES AND ACCEPTANCE

Table 501-4 of Subsection 501.03 of the *2020 MDOT Standard Specifications for Construction* is deleted.

Bond Coat: The following rates of Bond Coat shall be used unless otherwise called for on the plans or directed by the Engineer.

1. For all existing pavements and pavement surfaces, and over new concrete base courses, the application rate for the bond coat diluted at a 1:1 ratio shall be **within a range of 0.06 – 0.14 gallons per square yard (gsy). The target rate shall be 0.10 gsy.**
2. Between subsequent HMA Mixture courses the application rate for the bond coat diluted at a 1:1 ratio shall be **within a range of 0.03 – 0.07 gallons per square yard. The target rate shall be 0.05 gsy.**

Compaction of HMA Mixtures

General: The compaction of HMA Base courses, Binder courses, Leveling courses, and Top courses placed directly on an aggregate base shall be as described in Section 501.03 of the *2020 MDOT Standard Specifications for Construction*.

Compaction of HMA Top Courses, excluding any mixture placed directly on an aggregate base, shall be as specified herein. These requirements take precedence over any conflicts with the requirements of the *2020 MDOT Standard Specifications for Construction*.

Construction of HMA Mixtures

The current Wayne County specifications for HMA Pavements and *2020 MDOT Standard Specifications for Construction* will be amended to include the following:

1. The temperature range of the HMA when applied at the project site will be specified by the HMA supplier prior to placement and is provided to the Engineer for approval. The temperature range for placement at the project site shall be within $\pm 20^{\circ}$ F of the specified temperature. HMA mixes not meeting the minimum temperature of 250° F or exceeding the maximum temperature requirement of 350° F will be rejected.
2. The temperature of the surface, which the HMA mix will be applied, shall not be less than 40° F.

Quality Assurance Sampling and Testing

After the job-mix-formula (JMF) is established and approved by the Engineer, the aggregate gradation and binder content of the HMA mixture furnished for the work shall be maintained within Range 1 uniformity tolerance limits permitted for the job-mix-formula specified in Table 2. Aggregate gradation will be determined from a sample obtained by using an ignition furnace as in *MTM 319-01*. The binder content will be determined by calculated value using the Maximum Specific Gravity (Gmm) as tested in *MTM 314*. When mixtures are tested for Air

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Voids, Voids in Mineral Aggregate (VMA), Maximum Specific Gravity (Gmm), and Binder Content based on calculated value using Maximum Specific Gravity (Gmm) the mixtures shall also meet specifications listed in Table 3.

Acceptance sampling and testing will be performed by WCDPS using the sampling method and testing options selected by the Engineer. All sampling will be done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Mixtures Behind the Paver)*. Each day of production, WCDPS will determine the number of samples to be taken for each mix type. Acceptance testing will be performed at minimum frequency of once per 1000 tons. Quality Control measures to ensure job control are the responsibility of the Contractor. All persons performing QC and QA HMA field sampling must be Local Agency HMA Sampling Qualified.

All persons performing HMA testing must be at a minimum Hot Mix Asphalt Level One certified and maintain certification through an approved program. The MDOT HMA certification program is an approved program.

All labs performing Acceptance testing or Quality Control testing shall be qualified labs per the *MDOT HMA Production Manual* and participate in the *MDOT Round Robin Program*, or as a minimum be *AASHTO Materials Reference Laboratory (AMRL)* accredited for *AASHTO T30* or *T27*, and *AASHTO T164* or *T308*.

The minimum required in-place density shall be 92.0 percent. The Contractor shall be responsible for establishing a rolling pattern that will achieve the required in-place density. Any time minimum in-place density is not being achieved, the Contractor shall immediately notify the Engineer. The Engineer may suspend placement operations until the Contractor can establish a rolling pattern that will achieve the required in-place density. Contract time will continue, and the Contractor will not be compensated for down time.

All persons performing Density Control shall be at a minimum a Michigan Certified Density Control technician.

In-Place Density Quality Control Sampling During Production

Two cores approximately 6 inches in diameter, taken at random locations, will be allowed per subplot of material for QC of In-Place Density.

At the time any QC or QA cores are taken, remove free standing water from the core hole, apply tack coat to the interior of the core hole, fill with hot mixture, and compact. Obtain approval for the type of mix to be used for filling holes and for obtaining compaction at the pre-production meeting.

In-Place Density Quality Assurance Sampling

Random Sampling. Prior to the pre-production meeting, the Engineer will generate two columns of random numbers using a computer spreadsheet program or a calculator. The random

SUPERPAVE HMA MIXTURES AND ACCEPTANCE

numbers will be used for the longitudinal and the transverse measurement for determining the core location. The first column will be the longitudinal measurement and the second column will be the transverse measurement.

Sublot Size. Sublot size will not exceed 1000 tons. If a day's production is less than 1000 tons, the days tonnage will be considered a sublot. If a day's production exceeds 1000 tons, the tonnage will be divided into approximately equal sublot sizes, up to 1000 tons each. Sublots for the top course will be determined by total tonnage in lieu of daily tonnage to alleviate the number of cores.

The Engineer will locate and mark all QA core locations. All QA coring operations will be completed by the Contractor including dispute resolution and sublot retest coring. The Engineer will test all QA cores. If, for any reason, a core is damaged or determined not to be representative at the time of coring, the Engineer will evaluate and document the problem and determine if re-coring is necessary.

Core sample locations will be marked after final rolling. Core sample locations will be marked at the completion of a sublot and cores will be taken, prior to traffic staging changes, or at another time that is independent of paving operations. Any exceptions must be approved by the Engineer. The Engineer will identify four core sample locations for each sublot based on random longitudinal and transverse measurements. The Contractor will provide and pay for traffic control as required in the special provision for maintaining traffic, for all coring procedures including dispute resolution and sublot retest coring.

The Engineer will mark each core location with a 2-inch diameter paint dot, paint marker, or keel crayon, which represents the center of the core. If the center of the core is less than 5 inches from either edge of pavement, another transverse random number will be selected, and the core sample site moved to the new location.

Notify the Engineer in advance of coring to ensure that WCDPS has a representative to witness the coring operation and take immediate possession of the cores. Drill a core sample approximately 6 inches in diameter at each core location. Do not damage cores during removal from the roadway. Measure cores at the time they are extracted from the pavement. Any core disqualified based on the minimum thickness criteria or damaged during removal will be discarded and a new core location will be selected by the Engineer using the random number chart. If more than 50 percent of the cores in a lot are disqualified based on minimum thickness criteria, production must stop. Production will not be allowed to continue until the Engineer has confirmed that the paving operation is meeting the contract application rate. All previous pavement, base aggregate, or bond coat material will be sawed off the bottom of the core samples by the Engineer.

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The minimum core thickness for each mixture type is:

Hot Mix Asphalt Mixture No.	Minimum Core Thickness
2E	3 inch
3E	2-1/4 inch
4E	1-1/2 inch
5E	1-1/8 inch

Alternate Acceptance In-Place Method

Density acceptance for Hand Patching, Joint Repairs, Driveways, and Widening/Tapers/ Gores of less than or equal to 500 feet or determined by the Engineer will be as follows. Density acceptance for these processes will be by density gauge. Establish the compaction effort for each pavement layer to achieve the required in-place density values. After the final rolling, the Engineer will use a density gauge using the Gmm from the JMF for acceptance. A minimum of six random locations per subplot will be tested for density. If the average of the density values is equal to or greater than 92.00 percent of the Gmm, the pavement density will be accepted. If the average of the subplot density tests are less than 92.00 percent of the Gmm, the Contractor must take corrective action to achieve a minimum average of 92.00 percent of the Gmm.

In-Place Density Quality Assurance Testing

Pavement In-Place Density acceptance testing will be completed by the Engineer within 4 calendar days after the Engineer has taken possession of the cores at the project site. Testing will be in accordance with *MTM 315*. The Engineer and Contractor will mutually agree to use either vacuum dry or oven dry method as outlined in *MTM 315*. This agreement will be documented at the pre-production meeting. The Engineer’s test results on the compacted HMA will be used as a basis of acceptance and payment.

Rejected Mixtures

The Contract Unit Price for HMA Mixtures, per subplot, that fall below the required 92.0 percent In-Place Density, based on the Maximum Theoretical Specific Gravity (Gmm) from the JMF, will be decreased as follows:

$$\text{Adjusted Contract Unit Price} = \text{Contract Unit Price} - \text{Contract Base Price Adjustment}$$

A. A negative adjustment in the HMA Mixture Contract Base Price, when the average In-Place Density of the subplot is less than 92.0 percent, but equal to or greater than 91.0 percent will occur according to the following formula:

$$\text{Contract Base Price Adjustment} = \text{Contract Base Price} \times 0.10$$

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B. A negative adjustment in the HMA Mixture Contract Base Price, when the average In-Place Density of the subplot is less than 91.0 percent, but equal to or greater than 90.0 percent will occur according to the following formula:

$$\text{Contract Base Price Adjustment} = \text{Contract Base Price} \times 0.25$$

If the average In-Place Density of the subplot is below 90.0 percent, the material placed shall be removed and replaced at the sole expense of the Contractor.

Dispute Resolution Process for In-Place Density

If the Contractor disputes the WCDPS in-place density testing results, the Contractor can request to take cores to verify the original failing density results within two days after they are notified that the material did not meet specifications. If the Engineer approves, the Engineer will establish the limits of the area, or separate discrete areas, to be represented by the cores and the core locations. Not more than one core for every 1300 linear feet of any discrete area in question will be taken. Dispute resolution cores will be located using random numbers as per the original procedure. The Contractor shall notify the Engineer 24 hours in advance of coring to ensure that WCDPS has a representative to witness the coring operation and to take immediate possession of the cores. After the Engineer takes possession of the cores, WCDPS will complete the density testing of the cores. The density of the cores will supersede the density of the original cores. The resulting core density for any areas, discrete, or total, established by the Engineer, shall be applied to the above Contract Base Price Adjustments or if required, the HMA shall be removed and replaced. After completion of the core testing the Engineer will notify the Contractor of the results. All costs associated with this additional testing will be borne by the Contractor. Delays for additional testing shall not be considered grounds for any extension of time to the contract.

Measurement and Payment

The completed work as measured for SUPERPAVE HMA PAVEMENTS will be paid for at the contract unit price for the following contract items (pay items):

Pay Item	Pay Unit
Misc HMA, 2EML	Ton
Misc HMA, 2EMH	Ton
Misc HMA, 3EML.....	Ton
Misc HMA, 3EMH	Ton
Misc HMA, 3EMH, High Stress	Ton
Misc HMA, 4EML.....	Ton
Misc HMA, 4EMH	Ton
Misc HMA, 4EMH, High Stress	Ton
Misc HMA, 5EML.....	Ton
Misc HMA, 5EMH	Ton
Misc HMA, 5EMH, High Stress	Ton
Misc HMA, Wedge	Ton
Misc HMA, Hand Patching	Ton
Misc HMA Approach.....	Ton

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All “Misc HMA” Mixtures will be measured by weight in tons. The pay items will be based on the type of mixture being specified. The contract unit price will be payment in full for all materials, labor, and equipment required to complete the work as specified.

Bond Coat SS-1h will not be paid for separately but shall be included in the “Misc HMA” Mixture being placed.

HMA Contract Unit Price Adjustments

Bond Coat: In accordance with the formula and the tables below, price adjustments will be made if the penetration of the distillation residue fails to meet the specified range of 40 to 90 dmm and/or the percent of bituminous residue fails to meet the specified minimum. These price adjustments shall be cumulative.

$$P = F \times \frac{2000 \text{ rc}}{A}$$

Where:

P = Price adjustment per ton of HMA cover material.

F = Price reduction factor from table below.

r = Specified Bond Coat application rate (gallons per square yard).

c = (0.75) Constant representing applied rate of Bond Coat.

A = Application rate of the HMA mixture in the layer placed on the Bond Coat, in pounds per square yard.

Penetration of Distillation Residue, dmm	Price Reduction Factors (F) (Dollars/Gallon)
35 to 39	0.30
91 to 100	0.30
30 to 34	0.45
101 to 109	0.45
Less than 30	0.90
Greater than 110.....	0.90

Percent of Bituminous Residue	Price Reduction Factor (F) (Dollars/Gallon)
27% - 30%	0.30
20 % - 26.9 %	0.45
Less than 20%	0.90

From September 15 to May 15, the Price Reduction Factor (F) will be as follows:

Percent of Bituminous Residue	Price Reduction Factor (F) (Dollars/Gallon)
46% - 48%	0.30
44 % - 46%	0.45
Less than 44.....	0.90

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For price adjustment purposes, the tests sample will represent the entire area of bond coat placed on the day the sample was taken plus any preceding coverage since the last sample was taken or since the beginning of the work, whichever is less.

HMA Mixtures

Table 1: Performance Graded Binder Utilization

Mixture Type	HMA Mainline	High Stress HMA
EML	PG 64-22 Top & Leveling, Wedge Base Course and Drives	--
EML	PG 64-22 Top & Leveling, Wedge	--
EMH	PG 70-22P Top & Leveling Course PG 64-22 Base Course, Wedge Course and Drives	PG 76-22P Top & Leveling Course PG 70-22P Base Course

Table 2: Uniformity Tolerance Limits for HMA Mixtures

PARAMETERS	TOP & LEVELING COURSE		BASE COURSE	
	Range # 1	Range #2	Range # 1	Range #2
Sieve Size				
% Passing No. 8 and Larger	±5.0	±8.0	±7.0	±9.0
% Passing No. 30	±4.0	±6.0	±6.0	±9.0
% Passing No. 200	±1.0	±2.0	± 2.0	±3.0
PG Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50
Crushed Particle Content	- 10%	- 15%	- 10%	- 15%

Table 3: Uniformity Tolerance Limits for HMA Mixtures

	Superpave Mixtures
Binder Content	± 0.5%
Air Voids	± 1.0% (% @ Ndes)
Voids in Mineral Aggregate (VMA)	± 1.0%
Maximum Specific Gravity (Gmm)	± 0.019

WCDPS will test for Uniformity Tolerances in Table 3 at least once per Job Mix Formula. WCDPS reserves the right to vary the testing frequency for volumetric specifications at the Engineer’s discretion depending on the daily production. The Contractor will still be required to meet stated tolerances in Table 3.

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HMA Paving Mixtures Subject to Rejection or Penalty

Confirmed Test - The initial test result fails to meet Range #1 or Range #2 and the laboratory retest result of the sample also fails to meet the Range #1 or Range #2.

Consecutive Tests - Two or more tests run on the same asphalt mix (e.g., HMA Base Course) but representing separate samples (e.g., first sample test a.m., second sample test p.m., and the third sample tested a.m. the following day of production) from the same plant for the same project.

Initial Test - The first test run on a sample of asphalt mix.

Non-Conforming Mixture - Asphalt mixture which fails to meet the Range #1, Range #2, or any other property (e.g.: VMA, air voids, etc.) as defined in this special provision.

Non-Confirming Test - The initial test fails to meet Range #1 or Range #2 and the laboratory retest of the same sample is found within Range #1 on the same sample.

Range #1 - If, on two consecutive tests of the same mixture, the binder content or the aggregate gradation on the same sieve exceeds the uniformity tolerance of Range #1 but meets the uniformity tolerance of Range #2, the mixture shall be rejected. If, in the Engineer's judgment, the non-conforming mixture warrants removal, the Contractor shall remove and replace the non-conforming mixture with a mixture meeting specification requirement at his/her expense. If, in the Engineer's judgment, the non-conforming mixture can remain in place, the contract unit price for the non-conforming mixture shall be reduced in accordance with the following schedule:

<u>Non-conforming Item</u>	<u>Reduction</u>
Binder (minus)	10%
Binder (Plus)	5%
Each Sieve	5%

The total accumulated reduction shall not exceed 20 percent for material outside Range #1 and within Range #2.

Range #2 - If any one item in a confirmed test as previously defined fails to conform to the Range #2 tolerance (includes the minimum crushed content requirement, maximum soft particles requirement, maximum flat and elongated particles requirement, or fines to effective binder ratio); and if, in the Engineer's judgment, the non-conforming mixture warrants removal, the Contractor shall remove the non-conforming mixture and replace it with a mixture conforming to specification requirements at his/her expense. If, in the judgment of the Engineer, the non-conforming mixture can remain in place, the contract unit price for these mixtures shall be decreased by 10% for each item up to a maximum of 30% when there is more than one non-conforming item. If a second consecutive test still indicates the item to be outside Range #2 tolerance, shipping to the project shall be stopped until corrections have been demonstrated to have been made. Payment for the accepted mixture, including the material represented by the first test, will be decreased by 30% of the contract unit price for those mixtures outside Range #2.

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Superpave HMA Requirements - If any one test does not exhibit characteristics conducive to a non-yielding, stable and serviceable pavement (low VMA, high or low air voids) the pavement shall be removed and replaced with the material conforming to specification requirements at the Contractor’s expense.

If, in the Engineer’s judgment, the non-conforming mixture can remain in place, the contract unit price for the non-conforming mixture shall be reduced in accordance with the following schedule:

HMA Contract Unit Price Adjustments

Mixture Property	Deviation (d) BELOW the Field production requirement (Table 3)	Deviation (d) ABOVE the Field production requirement (Table 3)	Negative Unit Price Adjustment %
Air Voids (deviation from JMF)		1.0<d≤1.3	5
	1.0<d≤1.2	1.3<d≤1.5	10
	1.2<d≤1.4	1.5<d≤1.7	15
	1.4<d≤1.6	1.7<d≤1.9	25
	1.6<d≤1.9	1.9<d≤2.2	50
	1.9<d	d>2.2	Removal
Voids in Mineral Aggregate (VMA) (deviation below minimum value in Special Provision for Superpave HMA Mixtures)			
	1.0<d≤1.2		10
	1.2<d≤1.5		25
	1.5>d		Removal

d=Target per Table 3

The contract unit price reductions indicated above will be in addition to any contract unit price adjustments resulting from the confirmed test results on the nonconforming mixture. The above reductions shall be cumulative.

If a second consecutive test on the same item as mentioned above indicates the item to fail specifications; shipping to the project shall be stopped until either corrections have been demonstrated to have been made or a new mix design has been submitted to the Testing Laboratory as required by the Engineer. The Contractor will have to furnish test results for the new mix design showing the mix will meet specifications prior to recommencing production on the project.

Testing procedures shall be in accordance with Michigan Test Methods.

****The Split Sample will be tested by Wayne County. Test results on reheated Split Sample will be adjusted by the Correction Factors supplied by the contractor with the Mixtures Analysis Data. The results of the testing performed by Wayne County on the reheated split sample shall become the results of record.**

SUPERPAVE HMA MIXTURES AND ACCEPTANCE

Dispute Resolution for Asphalt Testing

If the Contractor wishes to dispute the WCDPS results, the Contractor can procure a referee sample when obtaining the original sample. WCDPS will take immediate custody and within two days after they are notified that the original material did not meet specifications they can request the referee sample be run by an independent Consultant of WCDPS's choosing at the Contractors own cost. The Contractor will arrange for the consultant to pick up the referee sample from WCDPS office and all results shall go directly to WCDPS. There will be no time constriction for referee results but delays for this additional testing shall not be considered grounds for any extension of time to the contract. The referee sample results will supersede the original test results. The results for any areas, discrete, or total, established by the Engineer, shall be applied to the above Contract Base Price Adjustments or if required, the HMA shall be removed and replaced, at the contractor's own cost. After completion of the referee sample testing the Engineer will notify the Contractor of the results.

All costs associated and material needing discarding with this additional sampling and testing will be borne by the Contractor.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
CONCRETE PAVEMENT CONSTRUCTION

1 of 4

Description

This work shall consist of furnishing and placing Concrete Pavements, Concrete Shoulders, and/or Concrete Base Courses, as shown on the plans or as directed by the Engineer. This work shall be done in accordance with Sections 601 and 602 of the 2020 MDOT Standard Specifications for Construction, the Wayne County Special Provision for “Mixtures, Contractor Quality Control and Quality Acceptance of Portland Cement Concrete”, Wayne County Standard Plans P Series and as herein specified.

Materials

Concrete for pavement, shoulder and/or base course on this project shall be made using 6AA gravel, slag or stone aggregates. The 6AA aggregate shall meet the grading and physical requirements of Section 902 of the 2020 MDOT Standard Specifications for Construction, except as modified by the Special Provision for “Mixtures, Contractor Quality Control and Quality Acceptance of Portland Cement Concrete”.

Concrete Base Course constructed with integral curb shall be Grade 3500 Concrete.

Sampling Methods: Concrete shall be sampled in accordance with the Wayne County Special Provision for “Mixtures, Quality Control and Acceptance of Portland Cement Concrete.”

Load Transfer Assemblies: Load transfer assemblies shall be built in accordance with Section 914 of the 2020 MDOT Standard Specifications for Construction and the MDOT Standard Plan R-40 Series.

All load transfer assemblies shall be delivered to the job site for sampling and acceptance testing no later than thirty (30) calendar days prior to the scheduled paving date.

Construction

Integral Curb: Integral curb shall be constructed monolithic with the pavement slab. The curb material shall be placed before the pavement has started its initial set, and shall be of the same mix and shall conform in all respects to the requirements for concrete in the pavement.

Immediately following the final floating of the pavement, the area where the curb material is to be placed shall be roughened so as to secure a good bond between the pavement and the curb. The curb concrete shall be spaded sufficiently to eliminate all voids, and given a final burlap-type finish meeting the approval of the Engineer.

CONCRETE PAVEMENT CONSTRUCTION

Radii header (2' minimum) shall be constructed at all street returns and commercial drives per Wayne County Standard Plan P5 and P7.

Immediately after removal of the forms, any visible areas of honeycomb or minor defects shall be filled with mortar. The mortar shall consist of one part portland cement and two parts of fine aggregate from the same source as used in the pavement, and shall be applied with a wood float. Immediate steps shall be taken by the Contractor to correct the conditions contributing to these defects.

All transverse joints in the concrete pavement shall extend entirely through the integral curb. The edges of the transverse joint in the curb shall be rounded with an approved finishing tool having a radius of ¼ inch.

Joints in the integral curb shall be sealed with Hot-Poured Rubber-Asphalt type compound as specified in Subsections 602.03.A.14, 602.03.R and S and 914.04 of the 2020 MDOT Standard Specifications for Construction.

Slip-Form Paving: The slip-form paving equipment shall have automatic horizontal and vertical controls. If the Contractor cannot maintain the required horizontal and vertical controls using his selected method, the use of slip-form methods shall be discontinued and the pavement, shoulder, and/or base course placed by means of fixed forms.

Contraction Joints: Contraction joint spacing is based on slab thickness and is shown on MDOT Standard Plan R-43 Series.

Expansion Joints: Expansion joints of the type specified shall be placed as shown on the plans, as shown on MDOT Standard Plan R-42 Series, and as follows:

1. On both sides of bridge structures and at-grade railroad crossings as specified on MDOT Standard Plan R-43 Series.
2. At the “spring lines” of street returns.

End-of-Pour Joints: End-of-pour joints shall be placed at the location of full-width pavement and the start of non-reinforced temporary transition tapers as shown on the plans or as directed by the Engineer.

Reinforcement: Pavement reinforcement for Misc Conc Approach Pavt shall be placed as specified in Subsection 602.03.E of the 2020 MDOT Standard Specifications for Construction, and shall be constructed as shown on the plans and in accordance with MDOT Standard Plan R-45 Series.

CONCRETE PAVEMENT CONSTRUCTION

On the outside 13-foot lane, pavement reinforcement for a 12-foot lane shall be used and placed at its normal location relative to the longitudinal joint.

Tie bars: All tie bars shall be epoxy-coated. Damaged areas shall be repaired before placing concrete. Bent tie bars shall be inspected after straightening, and any damaged epoxy coating shall be repaired before embedment in concrete.

Epoxy-Anchored Lane Ties: Epoxy-anchored lane ties shall be of the size and spacing shown on the plans and in accordance with MDOT Standard Plan R-41 Series.

Epoxy-anchored lane ties shall be used to replace broken or bent lane tie bars in longitudinal bulkhead joints at the Contractor's expense.

Load Transfer Assemblies: Load transfer assemblies used in 13-foot lane widths shall be 11 feet long. They shall be placed in the inside 12 feet of the outside curb lane. Payment for the length of joints placed in this manner will be measured from back of curb to back of curb.

Texturing: Texturing of Concrete Pavement shall be in accordance with Subsection 602.03.K of the 2020 MDOT Standard Specifications for Construction, except as follows:

As soon as the concrete has set sufficiently to maintain a texture, the concrete surface shall be dragged longitudinally with damp burlap, maintaining contact with the surface across the entire width.

As soon as all excess moisture has disappeared and while it is still possible to produce a uniform surface of gritty texture, the pavement surface shall be dragged longitudinally using an approved artificial turf material to a degree of texturing as directed by the Engineer. The artificial turf material shall be suspended from a movable bridge and shall be in full longitudinal contact with the pavement surface for a minimum distance of three (3) feet. This method of texturing shall apply to concrete pavement only, not to concrete base course.

The turf material shall be kept free from accumulations of concrete mortar by removing the mat from the movable bridge and flushing the mat with water, or by other means approved by the Engineer. The texturing mat shall be replaced when the mortar accumulations harden and cannot be removed.

Pavement Curing: Curing shall be in accordance with Subsection 602.03.M of the 2020 MDOT Standard Specifications for Construction except the 3rd paragraph which shall read:

“The curing compound shall be applied at an application rate of not less than 2 gallons per 25 square yards no more than 30 minutes after the placement of the concrete. The curing system shall be on site and demonstrated to be functioning to the satisfaction of

CONCRETE PAVEMENT CONSTRUCTION

the Engineer prior to the placement of concrete.”

Concrete Temperature Limitations: The temperature of the concrete at the time it is placed on the subgrade shall be not less than 50° F nor more than 90° F.

Measurement and Payment

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

Pay Item	Pay Unit
Conc Approach Pavt, Reinf, ISC-(type)	Cubic Yard
Conc Approach Pavt, Reinf	Cubic Yard
Conc Base Cse, Nonreinf, ___ inch, Modified	Square Yard
Conc Pavt, Misc, Nonreinf, ___ inch, Modified	Square Yard
Conc Pavt, Nonreinf, ___ inch, Modified	Square Yard
Conc Base Cse, Nonreinf, ISC-(type), ___ inch	Square Yard
Conc Pavt, Nonreinf, ISC-(type), ___ inch	Square Yard
Shoulder, Nonreinf Conc	Square Yard

The unit price includes the Transverse Expansion Joints, where load transfer devices are not required. Joint sealing materials and load transfer assemblies will be included in the Expansion and Contraction Joints. Construction and sealing of all other longitudinal and transverse joints, Transverse Plane-of-Weakness Joints and Transverse End-of-Pour Joints, including sealant, Expansion Joints and Contraction Joints, of the type specified, shall be paid for separately.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
DETERMINATION OF PAVEMENT THICKNESS

1 of 2

Description

The Engineer will core pavement before final acceptance to determine the thickness of the concrete pavement according to Subsection 602.04.F of the 2020 MDOT Standard Specifications for Construction, and as specified herein.

The cores will be saved at the Testing Office for a period of twelve (12) months (1 year) after the completion of the core report, unless otherwise directed by the Engineer.

Initial cores may be taken as directed by the Engineer. If the initial cores are shown to be in the “B” or “C” range, additional cores will be taken in accordance with Michigan Test Method 201 and as modified herein.

The Department will only consider the dimensions not within the A or X range, for adjustment based on subsequent cores.

Michigan Test Method (MTM) 201 is modified as specified herein:

1. **Section 5.2.2:** Record the stationing and transverse location relative to centerline, edge of pavement, or other reference of each core to the nearest foot.
2. **Section 5.5:** Delete Note 3
3. **Section 5.5.1.2:** If the measurements for either or both of the additional cores are in the “C” range for the measurement for which the initial core was deficient, follow the requirements in Section 5.5.2.2.
4. **Section 5.5.2.1:** Initial Core Classified as C- The average pavement thickness of the first and second straddle core taken that is not in the C range will become the “substitute initial” core for the pavement unit. If the first and second straddle (substitute initial core) is classified as Type B, two additional cores will be taken as described in 5.5.1 utilizing the first straddle core, which is not in the C range, for locating the additional core.
5. **Section 5.5.2.2:** Additional Core Classified as C- The average pavement thickness of the first and second straddle core taken that is not in the C range will become the “substitute initial” core for the pavement unit. If the first and second straddle (substitute initial core) is classified as Type B, two additional cores will be taken as described in 5.5.1 utilizing the first straddle core, which is not in the C range, for locating the additional core.

DETERMINATION OF PAVEMENT THICKNESS

6. **Section 7.4:** Delete the last sentence of subsection 602.04.F.9, Table 602-2, Table 602-3A, and Table 602-3B. .

Wayne County Department of Public Services
WCDPS
(08-27-2021)
SPECIAL PROVISION
FOR
COLD WEATHER PROTECTION, CONCRETE PAVEMENT

1 of 3

Description

This work shall consist of providing cold weather protection for concrete pavement and of adding non-chloride accelerator to the concrete mix for the purpose of cold weather protection.

Construction

General: At any time when there is danger of freezing temperatures, there shall be available a sufficient amount of clean, dry straw or hay or waterproof paper blankets, and all other required materials to cover and protect at least 1,500 feet of pavement and as much more as may be necessary for protection of the concrete placed, all in accordance with these Special Provisions.

The temperature limitations specified herein shall be determined by the forecasts made by the Weather Bureau at the Detroit Metropolitan Wayne County Airport. The predicted low temperature shall be that forecast to occur during the next 24 hours.

Frozen materials shall not be charged into the mixer at any time. Before placing concrete, any ice or frost shall be removed from the forms and from any steel used in the pavement.

Concrete shall not be placed directly upon a frozen subgrade. The subgrade shall be covered with a layer of straw or hay 12 inches in thickness to protect it against freezing. A sufficient supply of straw or hay shall be distributed along the line of work to meet the needs. It shall be removed from the finished subgrade immediately ahead of paving operations and piled along the line of construction for use in covering the finished pavement. Prior to the placing of concrete, the subgrade shall be cleaned of loose straw and otherwise prepared in a manner satisfactory to the Engineer. Other covering materials as approved by the Engineer may be used to prevent subgrade freezing.

If the subgrade becomes frozen, the frost shall be removed to the extent and in the manner meeting the approval of the Engineer.

In order to accelerate hardening of the concrete when the temperature of the air in the shade and away from artificial heat when pouring concrete is between 40° F and 45° F, a non-chloride accelerator from the MDOT Qualified Product List shall be used at the dosage rate recommended by the MDOT Materials Source Guide.

Immediately after finishing of the concrete and as soon as hardening of the concrete will permit, the pavement shall be covered as prescribed under Ordinary Protection or Special Protection. The straw, hay or protective covering, as specified, shall remain in place until the

COLD WEATHER PROTECTION, CONCRETE PAVEMENT

concrete has developed a compressive strength of not less than 3,000 psi or for a minimum period of 14 days after placing of the straw or hay, as directed by the Engineer.

Care shall be taken to see that the covering is well placed around and over the forms and that it extends beyond the edge of the pavement for a distance at least equal to the depth of covering required.

Forms shall not be removed until the concrete has attained sufficient strength to prevent its being damaged by the removal operations. During form removal, the protective covering should be removed for as short a time as possible and should be replaced promptly to prevent loss of heat.

The mixing and placing of concrete shall stop in sufficient time each day to permit finishing of the concrete and the placing of the required protective covering during daylight hours; except that when the Contractor furnishes sufficient artificial lighting, as required by the Engineer, the placing of the protective covering may be deferred beyond daylight hours.

The requirements specified herein for the curing and protection of concrete in cold weather are minimum requirements, and the Contractor shall be responsible for the quality and strength of the concrete placed. Any concrete injured by frost action shall be removed and replaced at the Contractor's expense.

Ordinary Protection: Between May 1st and November 1st, when the predicted low temperature is to be below 35° F at any time within 72 hours after placing the pavement, the pavement shall be protected by not less than 12 inches of loose dry straw or hay, or one layer of waterproof paper blankets; and such protective covering shall remain in place until the concrete has developed a compressive strength of not less than 3,000 pounds per square inch or for a minimum period of 14 days after placing the protective covering.

Special Protection: No pavement may be placed between November 1st and May 1st unless it is provided for in the proposal or authorized by the Engineer, except that in no case shall concrete be placed when the predicted high temperature is to be below 35° F without written permission of the Engineer. When paving is permitted during this period, the following requirements shall apply:

The temperature of the concrete at the time it is placed on the subgrade shall be not less than 50° F nor more than 90° F.

In order to maintain a mix temperature between 50° F and 90° F, the mixing water or the aggregates, or both, shall be heated as required by the Engineer. The water and the aggregates shall be heated to a temperature of not more than 150° F. The heating of aggregates shall be done by the use of steam pipe under the aggregate piles, or by free steam discharged into the aggregate piles, or by steam heat in the batching bins. The

COLD WEATHER PROTECTION, CONCRETE PAVEMENT

heating of the water and the aggregates shall be controlled so that there will not be any large differences in temperature from batch to batch. The Engineer will determine the method to be used in heating the aggregate.

When there is any danger of the predicted low temperature dropping below 35° F, all the necessary materials for covering and protecting the concrete, equipment for heating the water and aggregates, when required, and a non-chloride accelerator shall be on the project and available for immediate use for the required method of curing and cold weather protection before any pavement is placed.

For predicted low temperatures from 25° F to 35° F, either one layer of waterproof paper blankets or 12 inches of loose dry straw or hay shall be placed.

For predicted low temperatures of 20° F to 25° F, one layer of waterproof paper blankets and 12 inches of loose dry straw or hay shall be placed.

For predicted curing temperatures less than 20° F, the minimum requirement for cold weather protection will be one layer of waterproof paper blankets and 12 inches of loose dry straw or hay overlaid with a waterproof protective covering consisting of tarpaulins, paper blankets, polyethylene sheeting or other approved material.

When temperatures are such that Special Protection is required as specified above, all concrete placed within the preceding 72 hours shall be similarly protected.

When Special Protection is started, it shall be continued in accordance with the above requirements unless warmer temperatures prevail for a period of at least 48 hours. Permission to eliminate Special Protection for such a period shall be as directed by the Engineer.

Measurement and Payment

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

Pay Item	Pay Unit
Cold Weather Protection, Conc Pavt	Square Yard

“Cold Weather Protection, Conc Pavt” will be measured by area in square yards for only those areas authorized by the Engineer. This work shall include furnishing all equipment, labor and materials, including concrete accelerators, required to complete the work as specified.

**WCDPS
(08-27-2021)**

**Wayne County Department of Public Services
SPECIAL PROVISION
FOR
FIELD OFFICE**

1 of 2

Description

A Field Office shall be provided for the project meeting the requirements of Section 809 of the 2020 MDOT Standard Specifications for Construction and as specified herein.

Materials

The Contractor shall furnish and maintain, for the exclusive use of the Engineer, an approved weatherproof building/trailer as a field office. The field office shall be located as approved by the Engineer, in full view of the work, and with at least one window facing construction operations.

The field office shall be at least 160 square feet in area. If a trailer is supplied as a field office, it shall be equipped with a 3 feet by 3 feet, minimum, platform with handrails and steps provided at the entry.

The field office shall be provided with at least three single-sash windows, a standard size door with keyed lock and hasp for an external padlock, a wooden locker large enough for the storage of implements and testing equipment, and with one wall-mounted table at least 3 feet by 6 feet in dimension.

The Contractor shall furnish power to the building. Generators will not be allowed unless approved by the Engineer. The Contractor shall furnish and maintain lighting and heating/air conditioning in the building capable of maintaining a temperature between 70° F and 80° F during working hours.

A cellular phone (type as approved by the Engineer) shall be provided for all projects. The Contractor shall provide, at a location near the field office, a sanitary facility for the exclusive use of the Engineer's personnel. The construction, regular maintenance and final removal of the facility shall be in accordance with local restrictions.

FIELD OFFICE

Measurement and Payment

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

Pay Item	Pay Unit
Field Office	Month

Field Office includes the cost of furnishing, setup, providing access, grading, placing, utility hook-up charges, maintaining, and monthly utility charges (e.g., cellular phone service, electricity, water and sanitary service fees) and for removal of the field office and sanitary facility upon completion of the project. The Engineer shall determine which months the Field Office is required and shall be paid for.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
SIGN, TYPE B, PERMANENT

1 of 2

Description

This work shall consist of furnishing, fabricating and erecting traffic control devices as shown on the plans, all in accordance with Section 810 of the 2020 MDOT Standard Specifications for Construction, except as herein noted.

Materials

All sign supports shall be 3 pound or square tubular steel posts, fabricated and installed as shown in MDOT Standard Plan SIGN-200-series for "Steel Posts." Square tubular steel posts shall be utilized only in locations where additional sign panels are installed perpendicular to primary sign panels.

Signs shall be fastened to the post with 5/16 inch diameter stainless steel bolts, stainless steel flat washers, nylon washers, stainless steel nylon insert lock nuts and self-aligning, galvanized steel reinforcing plates as shown in MDOT Standard SIGN-740-series "Miscellaneous Sign Connection Details." Self-aligning, galvanized steel reinforcing plates are not required on square tubular steel posts.

Retroreflective sign sheeting material shall meet the requirements of ASTM D 4956 Type XI for all signs unless otherwise indicated on the plans.

Street Name (D3-1) Signs:

- A: Material - No. 6061-T6 Aluminum (nominal 0.080 inch thickness) with 1½ inch radius on corners, transparent green film over Type XI micro prismatic sheeting.
- B: Text / Background - Reflectorized white letters on a reflectorized green background with a reflectorized white border.
- C: Length - At all locations the length of the sign blank will be dependent on the required legend.
- D: The sign blanks shall be 12 inches high. Lettering shall be 6 inches high, upper and lower case, using the "C" size stroke width, Highway Gothic Font. The borders shall be ½ inch wide.

Construction

Remove existing sign, post, connections and hardware. Height and lateral location of signs shall be as shown in the current Michigan Manual of Uniform Traffic Control Devices under Standardization of Location, and as shown in the Wayne County Standard Plan for M2 "Street

SIGN, TYPE B, PERMANENT

Name (D3-1) Signs.” All posts shall be driven to a minimum depth of 42 inches unless otherwise directed by the Engineer.

Street Name (D3-1) Signs: All locations - Each street name location per intersection shall require two (2) blanks, attached back-to-back to the post with the legend visible on the outer sides.

Measurement and Payment

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

Pay Item	Pay Unit
Sign, Type B, Perm	Square Foot
Sign, Type B, Perm, Local Community	SquareFoot

The signs shall be measured by the nominal area in square feet of each sign face. This item shall include the furnishing and installing of all sign support posts, attaching devices, and hardware.

This item shall include the removal of the existing sign, post, connections and hardware. These signs shall be disposed of by the Contractor unless otherwise specified on the plans.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
TEMPORARY PAVEMENT MARKING,
TYPE R, PAINT

1 of 1

Description

Temporary marking of pavement shall be in accordance with Section 812 of the 2020 MDOT Standard Specifications for Construction, and as described herein.

Materials

When pavement markings specified on the plans are to be of the removable type (R), paint may be specified as the marking material to be used. The paint shall be selected from MDOT’s Qualified Products List and be reflectorized with glass beads, all in accordance with Section 920 of the 2020 MDOT Standard Specifications for Construction.

Removal of temporary pavement markings which are paint shall be accomplished in a manner and by methods approved by the Engineer. Methods which are considered as acceptable are: shot-blasting, sand-blasting using air or water, high-pressure water, steam or superheated water, and solvents or chemicals. Removal of markings using mechanical devices such as grinders, sanders, scrapers, scarifiers, and wire brushes will not be permitted on finished-grade pavement.

Measurement and Payment

The completed work as measured for TEMPORARY PAVEMENT MARKING, TYPE R, PAINT will be paid for at the contract unit price for the following contract items (pay items):

Pay Item	Pay Unit
* Misc Pavt Mrkg, Type R, Paint, _ inch, (<u>color</u>), Temp	Foot
Misc Pavt Mrkg, Type R, Paint, _ inch, Stop Bar, Temp	Foot
Misc Pavt Mrkg, Type R, Paint, _ inch, Crosswalk, Temp	Foot
Misc Pavt Mrkg, Type R, Paint, (<u>symbol</u>), Temp	Each
Misc Pavt Mrkg, Type R, Paint, (<u>legend</u>), Temp	Each
* Measurement will be based on the length of 4 inch (or other specified width) paint lines placed on the roadway surface.	

The contract unit price shall be payment in full for all materials, labor and equipment required to complete the work as specified.

The removal of the temporary pavement markings shall be included in these items of work.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
TEMPORARY HMA SURFACE
AND TEMPORARY AGGREGATE BASE

1 of 2

Description

This work consists of constructing a temporary HMA surface, a temporary HMA surface on a temporary aggregate base, or a temporary aggregate base required for stage construction as called for on the plans and as directed by the Engineer.

Materials

The temporary HMA surface shall meet the requirements as specified for HMA leveling course.

The temporary aggregate base material shall be 21AA stone, gravel or crushed concrete, as defined in the Wayne County Special Provision for Aggregate Base Course, except that crushed concrete shall not be used unless the plans also call for a temporary HMA surface.

Construction

Perform excavation and embankment as necessary to maintain proper grade, ride and drainage to install the temporary HMA surface and/or temporary aggregate base, in locations as shown on the plans, and as directed by the Engineer.

The temporary aggregate base shall be constructed to the minimum depth as shown on the plans and compacted to 95 percent of the Maximum Unit Weight. Where called for on the plans, a temporary HMA surface shall be constructed to the minimum specified depth, and compacted to not less than 98 percent of the Maximum Unit Weight.

When the temporary HMA and/or aggregate are no longer necessary, the materials shall be removed and the grade reestablished in accordance with the plan staging, and as directed by the Engineer.

Measurement and Payment

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

**TEMPORARY HMA SURFACE AND
TEMPORARY AGGREGATE BASE**

Pay Item	Pay Unit
Temp HMA Surface, _____ inch	Square Foot
Temp Aggregate Base, _____ inch	Square Foot

The contract unit price shall be payment in full for furnishing all materials, labor and equipment necessary to move, place and compact the HMA and/or aggregate to the minimum depth as shown on the plans. Removal of the temporary materials ~~and any earth excavation or embankment required to reestablish the grade~~ shall also be included in these items of work.

~~The contract unit price shall also include any earth excavation and embankment necessary to achieve the proper grade, ride and drainage as directed by the Engineer.~~

The Temporary Aggregate Base contract item shall not be used to provide temporary access to street returns, residential drives or commercial drives required as a part of staged construction, part width construction, or gapping operation, where permanent Aggregate Base course is called for on the plans, but shall be included in the unit price of the Aggregate Base Course being placed.

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
RIPRAP

1 of 1

Description

This work shall be in accordance with Section 813 of the 2020 MDOT Standard Specifications for Construction, except as herein provided. Riprap placed at circular culverts with diameters 60 inch or less shall be constructed in accordance with the Wayne County Standard Plan E4 for Riprap at Culvert End Sections.

Materials

The materials used shall meet the requirements for Riprap as specified in Subsection 916.01.C of the 2020 MDOT Standard Specifications for Construction, except that only natural, rounded, bank-run stone or crushed limestone shall be allowed. Broken concrete and/or precast concrete blocks shall not be allowed.

Measurement and Payment

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

Pay Item	Pay Unit
Riprap, Plain, Modified	Square Yard
Riprap, Plain, Modified	Ton
Riprap, Plain, LM, Modified	Cubic Yard
Riprap, Heavy, Modified	Square Yard
Riprap, Heavy, Modified	Ton
Riprap, Heavy, LM, Modified	Cubic Yard

“Riprap,” of the type specified, will be measured in place by area in square yards, or by weight in tons, or by the loose volume in cubic yards. The furnishing and placing of a geotextile liner shall not be paid for separately. The contract unit price shall be payment in full for furnishing all materials, labor and equipment required to complete the work as specified.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
PRECISION BENCH MARK

1 of 3

Description

This work shall consist of furnishing all materials, equipment and labor necessary to install a precision bench mark according to the details shown on the plans or as directed by the Engineer.

Materials

Precision Bench Mark: The Berntsen Top Security Rod Monument System, the Surv-Kap Sectional Rod monument, or approved equal. The system consists of 5/8 or 9/16 inch diameter, three foot long sectional extension aluminum rods, driven to the point of refusal, affixed with a Tri-finned section and a survey cap (see Figure 1) includes PVC, granular material and concrete. The final full-length rod and top disk shall be recessed in a protective access cover and set in the sidewalk key flag at street intersections (see Figure 2), or as directed by the Engineer. Bench marks placed in other locations shall be centered in an 18 inch × 18 inch × 4 inch min. thick concrete slab, flush with the surrounding grade.

Construction

The precision bench mark shall be installed according to the Manufacturer’s instructions and as approved by the Engineer. Depth of penetration must be documented.

Wayne County Engineering shall be notified in writing prior to disturbing an existing precise bench mark or setting a new precision bench mark.

Measurement and Payment

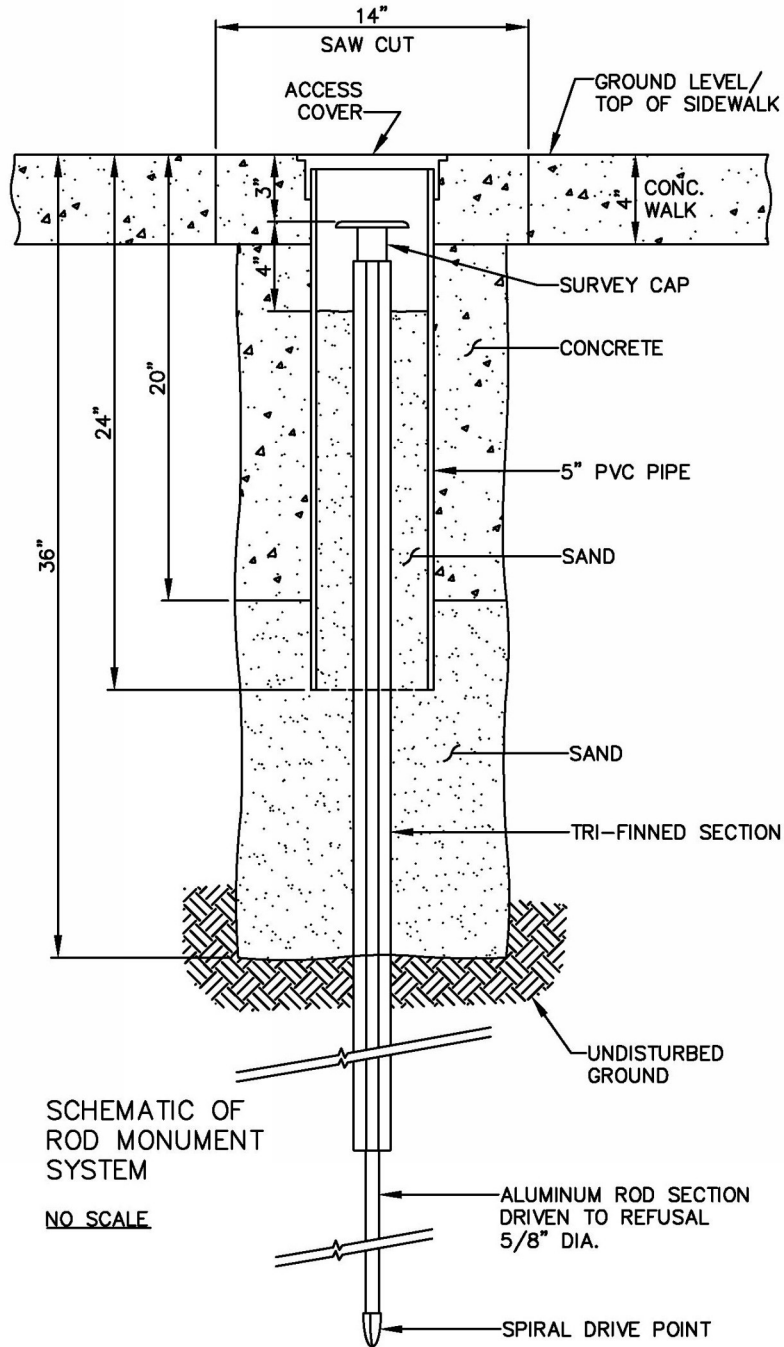
The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Monument, Prec Bench Mark	Each

The contract unit price shall be payment in full for furnishing all materials, labor and equipment required to complete the work as specified.

The contract unit price does **not** include establishing the elevation.

PRECISION BENCH MARK



A typical installation using an access cover and PVC pipe to protect monument from disturbance.

FIGURE 1

PRECISION BENCH MARK

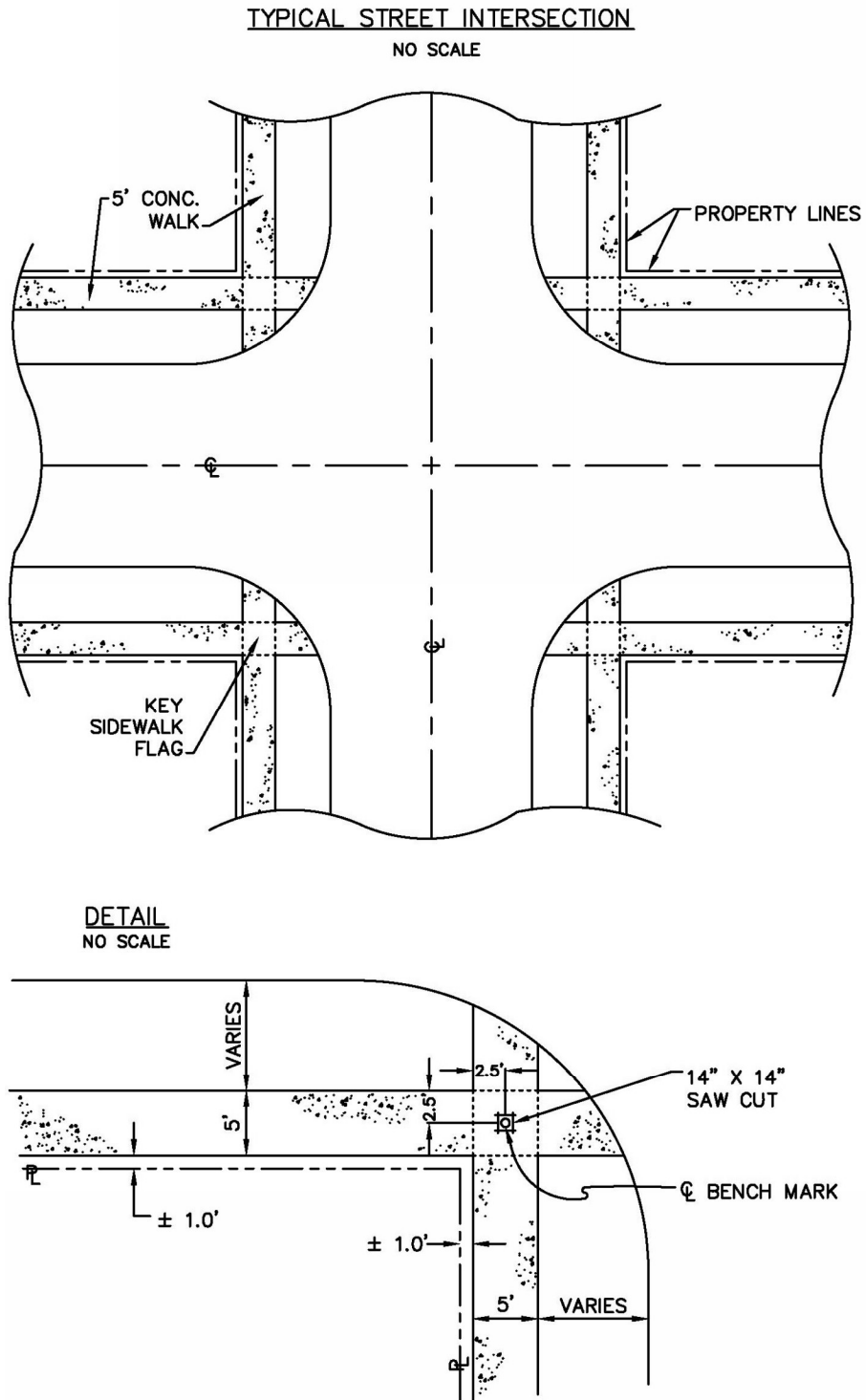


FIGURE 2

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
PORTLAND CEMENT CONCRETE MIXTURES,
QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

1 of 16

FHWA APPR: 01/06/2022

Description

This special provision sets forth requirements which include contractor submittals and other basis of acceptance of and payment for furnishing and placing Portland Cement Concrete (PCC) in accordance with the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and as specified herein.

The basis of material acceptance will be testing performed by the Wayne County Department of Public Service Testing Office or a commercial testing company, employed by Wayne County, at the County's option. The Quality Assurance (QA) testing will be at no additional cost to the Contractor. Quality Assurance for the project will include but not be limited to materials sampling, testing, construction inspection, project oversight and documentation. The Quality Control (QC) for the project will be provided by the Contractor at no extra cost to the County as detailed in this special provision.

Wayne County can provide the Contractor with the concrete mix designs. The Contractor does have the option of providing the concrete mix designs as outlined in this special provision. In either case, the Contractor must provide the documentation and testing for alkali silica reactivity at no expense to the County.

The Contractor is required to give a minimum 24-hour notice for all concrete testing. Concrete batch plant inspections (including calibration) require a 72-hour notice (excluding Saturday, Sunday, and Holidays).

At least 24 hours prior to paving, a Pre-Pour meeting will be held between the County Project Engineer, County Testing Engineer and/or designated Testing Personnel, Contractor Quality Control Personnel, and the Contractor. At this meeting, any issues regarding the placing, curing, and testing of the concrete will be discussed. All issues that may lead to a dispute with the County by the Contractor should be brought forth at this time.

Materials

Provide Portland cement concrete mixtures per Section 1004 of the MDOT 2020 Standard Specifications for Construction and as specified herein:

Aggregates:

The coarse aggregate shall be 6AA with a maximum freeze thaw dilation of 0.040 percent per 100 cycles in accordance with the procedures described in the Manual for the Michigan Test Methods (MTM-113, 114 and 115).

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

The 6AA coarse aggregate for slipform and slipform modified concrete mixes shall have a maximum freeze thaw dilation of 0.040 percent per 100 cycles and maximum absorption of 2.5 percent (ASTM C127).

The 6AA coarse aggregate used for Grade 4500 concrete shall originate geologically from natural sources with a maximum freeze thaw dilation of 0.040 percent per 100 cycles. The maximum percentage Los Angeles abrasion shall be 35 percent.

The coarse aggregate used for prestressed concrete beams shall originate geologically from natural sources with a maximum freeze thaw dilation of 0.010 percent per 100 cycles.

Fine or coarse aggregate generated from crushed concrete will not be permitted in any concrete.

The concrete producer is responsible for ensuring that the 2NS and 6AA aggregates are, at a minimum, in a saturated surface dry (SSD) condition prior to batching.

Cementitious Materials:

All concrete mixtures shall utilize one of the requirements listed below to mitigate any potential Alkali Silica Reactivity (ASR):

1. Between April 15th and October 15th, substitution of 25% of the total cementitious material by weight with Class F Fly Ash (ASTM C 618). The percent calcium oxide (CaO) for the fly ash shall be less than 15% and the available alkalis shall not exceed a maximum of 1.5%. Mill test reports for the fly ash must be submitted to the Testing Office.

Fly ash is not allowed for prestressed concrete beams.

2. A substitution of 35% of the total cementitious material by weight with Ground Granulated Blast Furnace Slag (GGBFS) Grade 100 or 120 (ASTM C989).
 - (a) Between November 1st and March 31st, unless otherwise directed by the Engineer, a non-chloride accelerator will be added to the concrete mixture. The accelerator shall be from the approved materials list prescribed in the MDOT Material Sampling Guide.

The Contractor must submit documentation to the Engineer that the concrete mixture(s) does not present the potential for deleterious expansion caused by alkali-silica reactivity (ASR).

An independent laboratory, including all associated testing equipment and staff performing ASR testing of aggregates, must be proficient in ASR testing in accordance with the applicable test methods and procedures. The laboratory must provide documentation to the engineer that they are qualified and proficient to conduct ASR testing in accordance with the required test procedures.

**PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND
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Perform testing on fine aggregate proposed to be used in any PCC Job Mix Formula (JMF). The Contractor must ensure the testing is conducted in accordance with a designated standard test procedure described herein. Test results must conform to the specified criterion for one of the following standard test methods. The Rounding Method described in ASTM E29 must be used when reporting expansion test results.

1. Method 1. ASTM C1293. Concrete Prism Test. If the expansion of concrete prisms is not greater than 0.040 percent (rounded to the nearest 0.001 percent) after 1 year, the fine aggregate is considered non-deleterious to ASR and may be used in the JMF. If the expansion of concrete prisms is greater than 0.040, but not exceeding 0.120 percent after 1 year, the aggregate is considered moderately deleterious to ASR reactivity and mitigation is required utilizing one of the two procedures listed above.
2. Method 2. ASTM C1567. Mortar Bar Test. If no previous test data are available for the fine aggregate that shows it is resistant to ASR using Method 1 or 2, replace 25 to 40 percent of the Portland cement in the concrete mixture with a supplementary cementitious material (slag cement or fly ash class F grade 100 minimum). A blended cement meeting the requirements of ASTM C595/C595M containing the above Portland cement and supplementary cementitious material proportions may also be used.

Demonstrate the ability of the supplementary cementitious material to control the deleterious expansion caused by ASR by molding and testing mortar bars in accordance with the standard test method described in ASTM C1567 using the mix proportions and constituent sources for both the aggregates and the cementitious materials that will be used for the project. Make at least three test specimens for each cementitious materials-aggregate combination. If the average of three mortar bars for a given cementitious materials-aggregate combination produces an expansion less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the JMF associated with that combination will be considered non deleterious to ASR. If the average expansion is 0.10 percent (rounded to the nearest 0.01 percent) or greater, the JMF associated with that combination will be considered not sufficient to control the deleterious expansion caused by ASR and the JMF will be rejected.

3. Method 3. ASTM C1260. Mortar Bar Test. If the expansion of the mortar bars is less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the fine aggregate is considered non-deleterious to ASR and may be used in the concrete without the need for ASR mitigation.

The Engineer will not approve the use of the JMF if the expansion exceeds the threshold limits for the respective ASTM test method used. The test results and report are valid for 2 years from the completion of testing.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

A current ASR test report for the fine aggregate proposed to be used in the Job Mix Formula (JMF) must accompany each JMF. Ensure the ASR test report is accompanied by a certification stating which test procedure was followed and that all tests were conducted in accordance with the designated standard test procedure.

All materials, labor, equipment, and laboratory facilities necessary to complete the work in accordance with this special provision is included and no additional compensation will be permitted.

If the concrete mix proportions exceed the limits in the ASTM method used, then the Engineer will not approve the use of that concrete mix proportion.

Fiber Reinforced Concrete:

Use as called for on the plans.

Delete section 903.05 of the MDOT 2020 Standard Specifications for Construction and replace with the following:

Fiber reinforced concrete will utilize 100% virgin polypropylene fibers added to the concrete at the time of batching at a rate recommended by the fiber manufacturer and as directed by the Engineer. The fibers will be Multi-Design graded containing no reprocessed olefin materials. The manufacturer of the fibers shall provide certification to the Testing Engineer documenting that the lot(s) of fibers utilized on this project meet or exceed the criteria established in ASTM C1116. The concrete producer must show the weight of fibers added to each load of concrete on the batch ticket for each load. The Contractor is responsible for demonstrating to the Engineer (for his approval) the means of adding the fibers to the concrete during production. The fibers shall be added to the mixing drum in a uniform manner to avoid clumping or a nonuniform dispersion of the fibers.

General Requirements for Concrete Production Equipment and Facilities

Prior to production, the Wayne County Testing & Inspection Office shall inspect and approve all concrete plants (Portable and Stationary) producing concrete for the project. The concrete plants shall meet the section 1001 of the MDOT 2020 Standard Specifications for Construction and as specified herein:

Ribbon Mixers: The mixing time shall be a minimum of 30 seconds and a maximum of 150 seconds.

At the direction of the Engineer, the efficiency of the concrete batch plants mixing apparatus will be determined in accordance with ASTM C94.

Admixture dosage rates will be per the current MDOT Materials Source Guide.

**PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND
CONTRACTOR QUALITY CONTROL**

General Requirements for Contractor Quality Control for Concrete

Delete Section 1002 of the MDOT 2020 Standard Specifications for Construction in its entirety and replace it with the following:

A. Standard Reference Procedures

The following ASTM test methods apply to the County established procedures for sampling and testing:

1. ASTM C31/C31M-Standard Practice for Making and Curing Concrete Test Specimens in the Field.
2. ASTM C39/C39M-Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
3. ASTM C138/C138M-Standard Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete.
4. ASTM C143/C143M-Standard Test Method for Slump of Hydraulic Cement Concrete.
5. ASTM C172/C172M-Standard Practice for Sampling Freshly Mixed Concrete.
6. ASTM C173/C173M – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
7. ASTM C231/C231M- Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
8. ASTM C1064/C1064M- Standard Test Method for Temperature of Freshly Mixed Hydraulic Cement Concrete.

B. Quality Control Elements

It is the Contractor's responsibility to plan, prepare, implement, and maintain a QC plan specific to the project for concrete that will provide quality oversight for production testing and control of construction processes applicable to the specifications and contract that identifies all procedures used to control production and placement including when to initiate corrective action necessary to maintain the quality and uniformity of the work.

It is the responsibility of the Contractor to conduct QC sampling, testing, and inspection during all phases of the concrete work at the minimum frequency or an increased frequency sufficient to ensure that the work conforms to specification requirements.

**PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND
CONTRACTOR QUALITY CONTROL**

Project-specific items and quality characteristics required in the QC plan include but are not limited to the following:

1. Organization chart.
2. QC Plan Administrator and contact information.
3. The name(s) and credentials of the QC staff. All personnel/sampling, testing, and transporting test cylinders must be currently certified as an ACI Concrete Field Technician Level I and MCA Michigan Concrete Technician Level I.
4. Methods for interaction between production and County testing personnel to engage timely corrective action, including suspension of work.
5. Project and plant specifics.
6. Coordination with County Testing personnel to calibrate and certify concrete production facilities.
7. Documentation, procedures, and submittals.
8. Certifications for concrete production facilities.
9. Current testing equipment calibration documentation including calibration factor.
10. Testing and initial field curing facilities (per ASTM C31) for QC and QA specimens.
11. Stockpile management plan.
12. Corrective procedures for exceeding action and suspension limits defined in Table 1.
13. Mixing time and transportation, including time from batching to completion of delivery and batch placement rate (batches per hour), along with the manufacturer's documentation relative to the batching equipment's capabilities in terms of maximum mixing capacity and minimum mixing time.
14. Placement and consolidation methods including monitoring of vibration.
15. Process for monitoring stability of air content of fresh concrete during concrete production and placement.
16. Hot and cold weather protection considerations and methods.
17. The frequency of sampling and testing as per this special provision.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

18. Handling and protection of test specimens.
19. Control charts with action and suspension limits.
20. Verification for non-deleterious alkali-silica reactivity (ASR), as specified in the contract.
21. Mix design, JMFs, and supporting documentation.
22. Proposed production lot size and location for use of each JMF on the project.
23. Methods to monitor construction equipment loading and open to traffic strength.
24. List of QC records to be submitted to the Engineer in accordance with this special provision.
25. Finishing and curing procedure.
26. Sawing and relief cutting procedures.

Submit the QC plan, for the appropriate items of work, to the Engineer for review a minimum of 10 working days before the start of related work. Do not begin concrete placement before acceptance of the QC plan by the Engineer. The Engineer will notify the Contractor of any objections relative to the content of the QC plan within 5 working days of receipt of the QC plan.

C. QC Records:

Maintain complete records of all QC tests and inspections. Document what action was taken to correct deficient concrete. Include sufficient information to allow the test results to be correlated with the items of work represented.

Furnish one copy of all QC records and test reports to the Engineer within 24 hours after the date covered by the record in a format acceptable to the Engineer. The Engineer will withhold acceptance of the concrete for failure to provide properly documented and timely QC records and reports.

If the Engineer is performing acceptance sampling and testing at the same time the Contractor is performing QC sampling and testing, all associated QC records must include the appropriate lot identification number that correlates with the County's acceptance lot identification number. The Contractor's QC material sampling and testing results are for informational purposes only.

D. Personnel Requirements: The QC Plan Administrator must have full authority and responsibility to take all actions necessary for the successful implementation of the QC plan, including but not limited to, the following:

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

1. Monitoring and utilizing QC tests, and other QC practices to ensure that delivered materials and proportioning meets specification requirements.
2. Monitoring materials shipped to the project, prior to their use, to ensure their continued compatibility toward producing consistent quality.
3. Periodically inspecting all equipment utilized in transporting, proportioning, mixing, placing, consolidation, finishing, and curing to ensure conformance with specification requirements.
4. Monitoring materials stockpile management, concrete batching, mixing, transporting, placement, consolidation, finishing, and curing to ensure conformance with specification requirements.
5. Maintaining and submitting all QC records and reports.
6. Directing the necessary corrective action to ensure continual conformance within the QC action limits.
7. Monitoring adjustments to the concrete mix design.
8. Secure the initial curing facility to protect the concrete strength test specimens and ensure the proper operation of the curing facility to provide the specified environment until the concrete strength test specimens are turned over to the Engineer.
9. Suspending production for the project when suspension limits are exceeded.
10. Conducting or monitoring adjustments to the JMF.

Individuals performing QC tests must demonstrate that they are proficient and capable of sampling and testing concrete or aggregate, where applicable, in accordance with the associated test procedures and Department requirements prior to commencement of related work.

E. QC Laboratory Requirements: Laboratories, including field laboratories and all associated testing equipment that prepare concrete mixes or perform QC testing, must demonstrate to the Engineer that they are equipped, staffed, calibrated, and managed as to be capable of batching and testing Portland cement concrete in accordance with the applicable ASTM test methods and procedures. Mix designs and their accompanying JMFs must include a statement signed by a MCA certified Michigan Concrete Technician Level II that all applicable standards test methods have been followed in verifying the mix design and JMF.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

F. Quality Control Sampling and Testing

Conduct startup sampling and testing for temperature, slump, density (unit weight), and air content on the first load. Do not place concrete until testing verifies that the fresh concrete properties have not exceeded the QC action and suspension limit thresholds specified in Table 1. Continue testing subsequent loads as described in the QC plan, for each grade of concrete delivered to the work site each day. The QC sampling and testing must be random and independent from the Engineer's QA sampling and testing. Provide the engineer 24 hours notification prior to each concrete placement. Perform sampling, testing, and initial curing in accordance with requirements of ASTM C31.

Prior to initial concrete placement, the testing personnel for both the Engineer's QA and Contractor's QC will conduct side-by-side correlation testing of the same concrete sample to verify correlation of both the County's and the contractor's test results for air content of fresh concrete. A sample is considered a representative quantity of concrete taken during production which is used to measure the quality characteristics for the concrete. Additional side-by-side correlation testing will be conducted whenever there is a change in QC's or QA's equipment or testing personnel for the project or if the Engineer determines that there is a significant difference between the QC and QA test results.

If the air content results of the side-by-side tests conducted by the QC and QA testers and equipment differ by more than 0.8 percent air by volume of concrete, a referee air content test must be conducted by a third party, designated by the engineer, but independent of the project before the beginning or continuation of concrete placement to resolve issues associated with non-correlation.

For concrete being placed in bridge decks, on bridge deck overlays, or in mainline paving (e.g. slipform paving), perform QC sampling and testing of the fresh concrete for air content loss at least once during each day of concrete production, or whenever QC tests have shown that QC action limits have been exceeded, whichever is more frequent. Sample and test a representative haul unit of concrete immediately after its discharge but before the paver or pump hopper, where applicable. Sample and test the concrete representing the same haul unit, again, after the paver or after discharge from the pump nose prior to placement. If the difference in measured air content between the two test locations for the same concrete is greater than 1.5 percent air by volume of concrete, suspend operations and administer corrective action. Resume concrete placement only after taking the necessary corrective action to reduce the loss in air content of fresh concrete between the two test locations, as approved by the Engineer. Document the corrective action to be taken in the QC records and make the necessary changes to the QC plan.

Concrete exceeding the maximum specification limits for slump or temperature must be rejected regardless of the total mixing time or number of mixing revolutions at the time of arrival to the project.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

The Engineer may require the Contractor to administer additional QC sampling and testing if the Engineer determines the Contractor’s current QC sampling and testing methodology is shown to be insufficient to ensure continual control of the quality of the concrete.

Take the appropriate corrective action, as described in the QC plan, when QC testing shows the QC action limits for any quality characteristic are exceeded. Suspend production if any of the QC suspension limits are exceeded or if the corrective action is not sufficient to restore the quality to acceptable levels.

Resume production only after making all necessary adjustments to bring the mixture into conformance with all applicable specifications and receiving approval to resume work from the Engineer. Document these adjustments in the QC records.

TABLE 1: QC Action and Suspension Limits

Quality Characteristic	Action Limits	Suspension Limits
Air Content (percent)	See Note 1 Below	< 5.5 or >8.5
Air Content Loss (percent)		Greater than 1.5
Conc. Temp. (deg. F)	As Defined in the Contractor QC Plan	< 45 or > 90 at time of placement
Slump (max.) (inch)		See Table 1004-1, footnotes c through n of the MDOT Standard Specifications for Construction
Density (Unit Weight)		N/A
<p>Note:</p> <ol style="list-style-type: none"> 1. Action limits for air content must be defined in the Contractor QC plan and cannot be < 5.5 or > 8.5 2. Suspend work if air content is <5.5 or ≥ 8.5 percent after pump or paver, regardless of the air content loss. 3. Concrete exceeding the maximum specified limit for slump and temperature requirements must be rejected regardless of the total mixing time at the limit of arrival to the project. 		

The Contractor, at no cost to the County, will provide curing facilities equipped to ensure the proper environment for the concrete strength test specimens during initial cure. Each initial cure facility must provide ventilation or insulation, where applicable, to ensure the ambient temperature (70-80 degrees F) surrounding the specimens is maintained to prevent extreme exposure and shall meet the requirements of ASTM C31. Each initial curing facility must be capable of being locked using a County provided padlock. The Contractor will ensure that all initial curing facilities are accounted for at all times and protected against theft and damage. The Contractor will locate and secure each initial cure facility throughout the project limits in such a manner as to minimize excessive transport of the test specimens prior to initial cure, as follows:

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

1. Immediately after finishing molded specimens, the Engineer will move the concrete strength testing specimens to the closest initial cure facility provided by the Contractor.
2. Immediately after all concrete strength test specimens are placed into the initial cure facility and the Contractor has established the proper initial curing conditions, the Engineer will secure the facility using the County provided padlock. Access to the concrete strength test specimens, thereafter, will only be permitted in the presence of the Engineer.
3. The Engineer will transport the concrete strength test specimens within 48 hours after molding, but not prior to 8 hours after the final set of the concrete, to the County's testing laboratory for final curing and strength testing. The specimens will be protected with a suitable cushioning material to prevent damage from jarring during the transport. The total transportation time must not exceed 4 hours prior to commencement of final curing.

General Requirements Quality Assurance (Acceptance) for Concrete

A. Contractor Provided Concrete Mix Designs:

The Contractor will have the option of providing the concrete mix proportion(s) for use on the project. However, the Contractor must provide concrete mix proportions for prestressed bridge beams, precast box culverts, precast 3 sided, and arch culverts.

The concrete mix designs for prestressed bridge beams must include current (no older than 6 months) ASTM C1567 test data providing that the materials to be used to fabricate the beams are nonreactive.

The concrete mix proportion(s) must be submitted to the County Division Testing Engineer for approval a minimum of 30 days before the anticipated placement date. The materials comprising the proposed concrete proportions must meet the requirements as previously outlined in this special provision.

The proposed concrete trial mix shall conform to the following:

1. Utilize dry weights with the materials meeting the requirements previously described in this special provision.
2. Use concrete admixtures listed in the MDOT Qualified Products List.
3. Meet the compressive strength and slump requirements and total cementitious materials content as show in Table 1004-1 of MDOT 2020 Standard Specifications for Construction
4. Include trial mix verification data including test reports and mix proportion adjustment calculations.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

- a. Trial Batches: Base trial batches on the same materials and proportions proposed for use on the project. Prepare at least one trial batch for each mix proportion in such time that the mix proportion(s) can be reviewed and approved at least 30 days prior to placement by the Testing Engineer the results of temperature, slump, density (unit weight), air content of fresh concrete, 28-day compressive strength, and age of concrete at the time of strength testing. The 28-day compressive strength for acceptance will consist of three separate compressive strength test results. The average of at least two strength test specimens represents one compressive strength sample test result. A trial or proposed mix proportions will be considered approved for use by the Testing Engineer only if the physical properties of the concrete (as described in Table 1) are within specification limits.
5. Proportions for concrete mixes will be selected according to ACI standard 211.1.
6. Mix designs submitted must include a statement signed by a certified Concrete Technician (Michigan Concrete Technician Level II) that all applicable ACI and ASTM methods have been followed in verifying the mix design and JMFs.
7. Changes in Materials and Proportions: Any changing from one approval mix design to another for the same grade of concrete must have prior approval by the Engineer. Record all changes to the mix design in the QC records along with the rationale for the change. Verify, prior to batching, that the proposed changes to the mix design will not affect the properties of the fresh concrete (slump, temperature, air content, density (unit weight), workability), nor result in excessive mortar bar expansion as a result of deleterious reactivity between the aggregates and cementitious materials as described in the materials section of this special provision.

B. Quality Assurance (Acceptance) Sampling and Testing

Samples for acceptance will be taken at random from the concrete at the location as close to its final placement into the forms or on the grade as practical. Samples will be taken approximately every 400 cubic yards or fraction thereof of continuously placed concrete. The sampling frequency may be increased, as directed by the Engineer, for smaller placements less than 400 cubic yards.

Samples for acceptance will not be taken at the concrete production facility (batch plant), nor prior to discharge from a concrete pump. Paving concrete mixtures and pumped concrete will be sampled for acceptance at the discharge end of the hose (i.e.: the point of placement) and at the point of placement in the forms or on the grate, where applicable. All quality requirements for the fresh concrete must be met before molding acceptance strength test specimens and placing the material into the project. Only one adjustment to the concrete mix will be allowed (e.g. adding air entrainment or water) after being tested by Quality Control personnel and prior to submission for Quality Assurance testing. No adjustments will be allowed to the concrete mix after testing is completed for Quality Assurance purposes.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

The location(s) within the project limits for acceptance testing of the fresh concrete and placement of curing facilities for initial curing of the 28-day compressive strength acceptance test cylinders will be determined by the Engineer in conformance with the following criteria:

1. The elapsed time between obtaining the first and the final portion of the composite sample must not exceed 15 minutes.
2. Testing for slump, temperature, and air content of fresh concrete must begin within 5 minutes after obtaining the final portion of the composite sample.
3. Molding of the 28-day compressive strength acceptance test cylinders must begin within 15 minutes after obtaining the final portion of the composite sample.
4. The concrete sample must be protected from the sun, wind, and other sources of rapid evaporation, and from contamination.

A minimum of three concrete strength test specimens per sample will be molded for 28-day compressive strength acceptance testing. Three or more concrete strength test specimens will be molded and cured as per the direction of the Engineer.

Minimum Required Strength of Concrete

All grades of concrete used on this project shall attain at least the compressive strengths listed for those respective classifications of concrete in Table 1004-1 of the MDOT 2020 Standard Specifications for Construction. The method to determine the compressive strength of concrete will be utilizing 4" x 8" or 6" x 12" cylinders.

Acceptance of compression strength is based only on the 28-day compressive strength as shown on Table 1004-1 of the MDOT 2020 Standard Specifications for Construction. For opening to traffic, the concrete must attain at least 85 percent of the required 28-day compressive strength. The compressive strength for the removal of forms must be 75 percent of the required 28-day strength.

The Contractor will provide the concrete for all testing. Curing and transportation will be according to this special provision and current ASTM and MDOT Standards by Wayne County forces. Test beams for flexural tests will not be made. For verification of the 28-day strength, the strength test will consist of the average of at least three 28-day cylinders from that set with no one cylinder being less than 500 psi below the required compressive strength. The Engineer will maintain custody of the strength test specimens from molding to compressive strength testing with the exception of precast and prestressed concrete structures.

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

Concrete Mixtures Subject to Rejection or Penalty

Compressive Strength:

When the test specimens representing a particular section of concrete fail to meet the required 28-day compressive strength (Class Design Strength) as shown in Table 1004-1 of MDOT 2020 Standard Specifications for Construction, the Contractor shall be required to remove and replace the concrete at no cost to the owner. If the Engineer determines that 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 shown in Table 2 below:

TABLE 2: PRICE ADJUSTMENTS

ADJUSTMENT UNIT PRICE	28-DAY COMPRESSIVE TEST RESULTS (ACS)
$2.0 \times \frac{RCDS - ACS}{RCDS} \times \text{Contract Unit Price for the Contract}$	1.0% to 5.0% below the RCDS
$2.75 \times \frac{RCDS - ACS}{RCDS} \times \text{Contract Unit Price for the Contract}$	5.1% to 10.0% below the RCDS
$3.5 \times \frac{RCDS - ACS}{RCDS} \times \text{Contract Unit Price for the Contract}$	10.1% to 14.0% below the RCDS
Remove and Replace, or as directed by the Engineer	More than 14.0% below the RCDS
Where: RCDS = Required Class Design Strength (28-Day) ACS = Actual Compressive Strength (28-Day)	

Coring (other than for pavement thickness validation) will only be allowed when directed by the Engineer in instances where compressive strengths need to be verified. Instances requiring coring may include failure of a representative section of concrete to meet 86% of the required class design strength, or the circumstance of missing or damaged compressive strength test specimens.

When compressive strength test specimens are lost or damaged while in the possession of the Engineer and coring is required to verify the 28-day compressive strength of a representative section of concrete, 100% of the contract unit price for the contract item for that particular section of concrete will be paid if the compression strength of the cores meet or exceed the Required Class Design Strength (28-day). If the cores fail to meet the Required Class Design Strength (28-day) the contract unit price for the contract item for that particular section of concrete will be reduced as described in this special provision.

In the event that coring is used to validate the 28-day compressive strength of a representative section of concrete, the contract unit price of the contract item will be reduced by the amount determined in Table 2 of this special provision. This reduction is in addition to any other reductions. For cores that fail to meet 86% of the required class design strength, the representative

PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND CONTRACTOR QUALITY CONTROL

section of concrete shall be removed and replaced at the expense of the contractor. All costs related to the coring shall be paid for by the contractor.

Wayne County personnel shall witness all coring and take possession of the cores immediately. The number and location of the cores will be determined by the Engineer.

Non-destructive testing utilizing methods per ASTM C803 or ASTM C805 will only be allowed when directed by the Engineer where coring would not be considered to be practical. The calibration of the equipment used for either non-destructive test method must be made on the same type of concrete utilizing the same materials. The non-destructive testing must be completed by qualified testing personnel at no additional expense to the County. In the event that the non-destructive testing shows the 28-day compressive strength to meet or exceed 86% of the Class Design Strength in Table 1004-1 of the MDOT 2020 Standard Specifications for Construction, the contract unit price for the contract item will be reduced by 25%. Representative sections of concrete failing to meet 86% of the Class Design Strength will be removed and replaced at no additional cost to the County.

Air Content:

During the course of the paving operation, an air test(s) will be completed for acceptance from the grade at a frequency designated in this special provision or as directed by the Engineer. If the concrete air test fails to meet the specified air content required (5.5% to 8.5%), the concrete plant operator will be immediately notified by the Engineer to make a correction. The first air test will be considered the initial air test and the location and volume of concrete it represents will be noted. The next air test will be taken on the concrete sample which represents the corrected concrete and will be called the corrected air test. If the second air test passes, the concrete will continue to be placed. In the event the second air test fails, the concrete placement operation will be halted until a correction can be made at the concrete production plant to bring the air content within specification. The nonconforming concrete which is placed between the initial air test and the succeeding corrected air test will be removed, if in the judgment of the Engineer the concrete warrants removal. The removed material will be replaced by concrete meeting specification at the Contractor's expense. If, in the opinion of the Engineer, the material can remain in place, the contract unit price for the contract item will be reduced in accordance with the following schedule. This reduction is in addition to any other reductions.

<u>Average of Initial and Corrected Air Test:</u>	<u>Reduction</u>
5.5% to 8.5%	0%
5.0 to 5.4%	50%
Below 5.0 %	(removal)
8.6% to 9.0%	25%
Above 9%	(removal)

**PORTLAND CEMENT CONCRETE MIXTURES, QUALITY ACCEPTANCE AND
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Measurement and Payment

All costs associated with this work are included in the unit prices for the relevant concrete items. The County will not pay separately for providing and maintaining an effective quality control program.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
CONCRETE SPILLWAY, MODIFIED

OHM/mrl

1 of 1

09/13/22

a. Description. This work consists of providing all materials, labor, and equipment necessary to install a concrete spillway in accordance with section 802 of the 2020 Standard Specifications for Construction and Standard Plan R-35 Series, except as modified by the details on the plans and this special provision.

b. Materials. Provide materials in accordance with subsection 802.02 of the 2020 Standard Specifications for Construction.

c. Construction. Construct the concrete spillway in accordance with subsection 802.03 of the 2020 Standard Specifications for Construction and Standard Plan R-35 Series, except as modified by the details on the plans and this special provision.

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

Contract Item	Pay Unit
Spillway, Conc, Modified.....	Foot

Concrete Spillway, Modified will be measured in place by length from edge of pavement to end of the spillway at specified locations. Payment includes all labor, materials, and equipment required to construct the spillway as shown on the plans.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
GUARDRAIL APPROACH TERMINAL, TYPE 2M

GCB:CT

1 of 3

APPR:CAL:DBP:04-02-20
FHWA:APPR:04-03-20

a. Description. This work consists of furnishing and delivering a tangent *Manual for Assessing Safety Hardware* (MASH), Test Level 3 (TL-3) compliant guardrail approach terminal (Type 2M), selected from those listed herein, to the job site; submitting detailed drawings and installation manuals for the selected terminal(s) to the Engineer; and installing the device(s) as shown on the plans or as directed by the Engineer. Complete this work in accordance with manufacturer's details and specifications, and this special provision.

b. Materials. Select from the following guardrail approach terminals.

1. MSKT, manufactured by Road Systems, Inc.
2. Soft-Stop, manufactured by Trinity Highway Products, LLC.
3. MAX-Tension, manufactured by Lindsay Transportation Solutions, Inc.

Ensure all posts within the terminal limits are made of steel. Provide materials for the selected terminal(s) meeting manufacturer's specifications and the requirements of this special provision. Ensure the selected guardrail terminal meets MASH, TL-3 criteria and has an FHWA federal aid eligibility letter.

Provide detailed drawings of the selected guardrail approach terminal(s) prepared by the respective guardrail approach terminal manufacturer(s). The drawings must contain details depicting the terminal attached to MDOT Type MGS-8 guardrail, detailed in Standard Plan R-60-Series.

Provide materials meeting the requirements of subsection 807.02 of the Standard Specifications for Construction for transitions required for connecting Guardrail Approach Terminal, Type 2M to Type B or Type T guardrail, as depicted in Standard Plan R-60-Series.

Provide installation and maintenance manuals for the selected guardrail approach terminal(s) prepared by the respective guardrail approach terminal manufacturer(s).

Provide high intensity adhesive reflective sheeting for placement on the terminal's impact head. The reflective sheeting must meet the stripe dimensions, colors, and pattern, based on traffic conditions, as shown on Standard Plan R-62-Series. The three-inch stripes, alternating black and yellow, on the reflective sheeting must slope downward at an angle of 45 degrees toward the roadway. The yellow stripes on the reflective sheeting must meet *ASTM D4956* specifications for Type XI retroreflective sheeting and must meet the requirements of Section 2C.64 and 2C.65 of the *MMUTCD*.

c. Construction. At least 14 days prior to terminal installation, provide the Engineer one electronic copy of the detailed drawings, installation manuals, and maintenance manuals for the selected guardrail approach terminal(s). Before terminal installation commences, ensure all questions, comments, or concerns raised by the Engineer concerning the detailed drawings, installation manuals, and/or maintenance manuals are addressed.

The Contractor must ensure that the guardrail terminal manufacturer is available to consult, by telephone or e-mail, with the Engineer, the Engineer’s designated representative, at no additional cost to the Department. Consultation will encompass the installation of guardrail terminals. Provide the manufacturer’s name, telephone number, and e-mail address to the Engineer prior to terminal installation. Provide responses from the manufacturer to any telephone or e-mail inquiries from the Engineer, the Engineer’s designated representative, within 2 working days.

Provide staff that have been trained by the respective guardrail terminal manufacturer to install the guardrail terminals utilized on the project. Training materials and course content for guardrail installation crew training will be as determined by the respective manufacturer. Provide manufacturer issued and dated training certificates for all staff on the guardrail installation crew. Training must have occurred within the previous 3 years. Ensure training certificates are provided to the Engineer 14 days before guardrail installation work commences. Provide updated training certificates no later than 48 hours after personnel changes occur.

Construct guardrail terminals in accordance with section 807 of the Standard Specifications for Construction, the manufacturer’s installation manual(s), and the detailed drawings provided by the manufacturer.

Construct transitions for connecting Guardrail Approach Terminal, Type 2M to Type B or Type T guardrail in accordance with the appropriate details on Standard Plan R-60-Series and section 807 of the Standard Specifications for Construction.

Do not attach reflectors or other attachments within the limits of the guardrail approach terminal. Attach guardrail reflectors within the limits of transition sections, detailed on Standard Plan R-60-Series, when connecting Guardrail Approach Terminal, Type 2M to guardrail Type B or Type T.

Unless otherwise specified by the Engineer, install guardrail approach terminal with a 1 foot-0 inch offset, in relation to the rear of the terminal, measured at the nose (front) of the terminal.

Completely cover the portion of the impact head assembly facing traffic with high intensity adhesive reflective sheeting meeting the requirements of this special provision.

Provide the guardrail terminal manufacturer’s installation checklist, completed and signed by the Contractor, for each individual guardrail terminal installed. Upon completion of guardrail work, provide written certification from the Contractor that all guardrail terminal installations have been installed per the contract and the manufacturers’ specifications and guidelines.

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:

Pay Item	Pay Unit
Guardrail Approach Terminal, Type 2M.....	Each

Guardrail Approach Terminal, Type 2M includes furnishing and installing a guardrail approach terminal meeting the requirements of this special provision.

Payment for **Guardrail Approach Terminal, Type 2M** includes all materials, labor, and equipment within the length of each terminal, as defined in subsections d.1, d.2, and d.3 of this special provision, and also includes payment for all materials, labor, and equipment required to construct a transition section, per Standard Plan R-60-Series, for connecting Guardrail Approach Terminal, Type 2M to guardrail Type B or Type T.

The lengths specified in subsections d.1, d.2, and d.3 of this special provision do not include a transition section, per Standard Plan R-60-Series, for connecting Guardrail Approach Terminal, Type 2M to guardrail Type B or Type T.

1. MSKT. Overall length is 59 feet, 4½ inches, measured from Post 1.
2. Soft-Stop. Overall length is 50 feet, 9½ inches, measured from Post 0.
3. MAX-Tension. Overall length is 55 feet, ½ inch, measured from the soil anchor.

If the pay item lengths defined in this special provision conflict with the pay item lengths specified in the manufacturer's details and/or specifications, the pay item lengths defined in this special provision will take precedence.

Payment for all consultations between the manufacturer and the Engineer, the Engineer's designated representative, and/or Contractor, preparing and submitting detailed drawings, installation manuals, operation/maintenance manuals, and other required documentation will be included as part of this pay item, and will not be paid for separately.

The required reflective sheeting on the impact head is included as part of this pay item, and will not be paid for separately.

Unless otherwise specified by the Engineer, payment will be made after guardrail terminal installation has been completed and all required documentation has been submitted to the Engineer.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
GUARDRAIL, CURVED GUARDRAIL, AND TEMPORARY GUARDRAIL

GCB:CT

1 of 1

APPR:CAL:NAP:05-19-22
FHWA:APPR:05-24-22

a. Description. This work consists of constructing guardrail, including curved and temporary guardrail, of specified type and post length.

b. Materials. Furnish materials in accordance with section 807 of the Standard Specifications of Construction. Furnish posts of specified length.

c. Construction. Construct guardrail in accordance with section 807 of the 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 items:

Pay Item	Pay Unit
Guardrail, Type __, __ inch Post	Foot
Guardrail, Temp, Type __, __ inch Post	Foot
Guardrail, Curved, Type __, __ inch Post	Foot
Guardrail, Curved, Temp, Type __, __ inch Post	Foot

All specifications pertaining to **Guardrail; Guardrail, Temp;** and **Guardrail, Curved** from subsection 807.04 of the Standard Specifications for Construction are applicable.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
GUARDRAIL, CURVED, TYPE B-CONTROLLED RELEASING TERMINAL

GCB:CT

1 of 1

APPR:CAL:NAP:05-19-22
FHWA:APPR:05-24-22

a. Description. This work consists of constructing curved guardrail, Type B- controlled releasing terminal (CRT), including temporary curved guardrail, Type B-CRT.

b. Materials. Furnish materials in accordance with section 807 of the Standard Specifications of Construction. Furnish wood CRT posts, as detailed on the plans.

c. Construction. Construct guardrail in accordance with section 807 of the Standard Specifications for Construction and as detailed 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 items:

Pay Item	Pay Unit
Guardrail, Curved, Type B-CRT.....	Foot
Guardrail, Curved, Temp, Type B-CRT.....	Foot

Guardrail, Curved, Type B-CRT and **Guardrail, Curved, Temp, Type B-CRT** includes wood CRT posts.

All specifications pertaining to **Guardrail; Guardrail, Curved;** and **Guardrail, Temp** from subsection 807.04 of the Standard Specifications for Construction are applicable to **Guardrail, Curved, Type B-CRT** and **Guardrail, Curved, Temp, Type B-CRT.**

SPECIAL PROVISION
FOR
SLOPE RESTORATION

OHM-mrl

1 of 3

09-15-22

a. Description. This work consists of preparing areas designated for slope restoration as shown on the plans or as directed by the Engineer and applying topsoil, fertilizer, seed, and bonded fiber matrix (BFM) mulch. Ensure turf establishment is in accordance with section 816 of the Standard Specifications for Construction and Standard Plan R-100 Series, except as modified herein or otherwise directed by the Engineer.

b. Materials. Provide the materials and use the application rates specified in sections 816 and 917 of the Standard Specifications for Construction unless modified by this special provision, the BFM manufacturer's guidelines or otherwise directed by the Engineer. Use the following materials on this project:

Slope Restoration, Bonded Fiber Matrix

1. Seeding mixture as called for on the plans.
2. Fertilizer, Chemical Nutrient, Class A.
3. Topsoil Surface, Furn, 3 inch or Topsoil Surface, Salv, 3 inch is required in all areas designated on the plans as Slope Restoration, Bonded Fiber Matrix. Remove any stones greater than 1 inch in diameter and all other debris from the topsoil.
4. Bonded Fiber Matrix. Provide a product from the list below or an approved equal.

Soil Guard manufactured by Mat, Inc.;

HydroStraw BFM manufactured by HydroStraw, LLC;

HydraMax manufactured by North American Green;

Bindex BFM manufactured by American Excelsior Company;

ProMatrix EFM manufactured by Profile Products, LLC.

If multiple grades of the selected product are available, use the grade appropriate for the application as approved by the Engineer.

Approved equal BFMs must consist of long strand, virgin wood fibers (90 percent by weight) bound together by a pre-blended, high strength polymer adhesive (10 percent by weight). The virgin wood fibers will be thermally refined from clean whole wood chips. Ensure the organic binders are a high viscosity colloidal polysaccharide tackifier with activating agents to render the resulting matrix insoluble upon drying.

Slope Restoration, High Velocity Mulch Blanket

1. Seeding mixture as called for on the plans.
2. Fertilizer, Chemical Nutrient, Class A.
3. Topsoil Surface, Furn, 3 inch or Topsoil Surface, Salv, 3 inch is required in all areas designated on the plans as Slope Restoration, Bonded Fiber Matrix. Remove any stones greater than 1 inch in diameter and all other debris from the topsoil.
4. High Velocity Mulch Blanket - see section 816 of the 2020 Michigan Standard Specifications for Construction for requirements of high velocity mulch blanket.

c. Construction. Use construction methods in accordance with subsection 816.03 of the Standard Specifications for Construction. Begin this work as soon as possible after final grading of the areas designated for slope restoration but no later than the maximum time frames allowed by subsection 208.03 of the Standard Specifications for Construction.

Shape, compact and assure all areas to be seeded are weed free prior to placing topsoil. Place topsoil to the minimum depth indicated herein to meet proposed finished grade. If the area being restored requires more than the minimum depth of topsoil to meet finished grade, fill this additional depth using topsoil or, at the Contractor's option, embankment. Furnishing and placing this additional material is included in the item of work for slope restoration.

Ensure topsoil is weed and weed seed free and friable prior to placing seed. Remove any stones greater than 1 inch in diameter and other debris. Apply seed mixture and fertilizer to prepared soil surface. If using hydroseeding equipment, incorporate the seed into the friable topsoil using the handgun/reel and spray directly into the seed bed. If using other methods of seed application, incorporate the seed into the top 1/2 inch of topsoil.

Apply seed mixture and fertilizer to the prepared topsoil surface at the specified rates.

Mix the BFM and organic binders thoroughly at a rate of 40 pounds for each 100 gallons of water or as otherwise recommended by the manufacturer. Hydraulically apply the BFM slurry in successive layers, from two or more directions, to fully cover 100 percent of the soil surface. Ensure the minimum application rate is at least 3000 pounds of BFM for each acre or otherwise apply in accordance with the manufacturer's recommendations as appropriate depending on site conditions.

Do not apply on saturated soils or immediately before, during or after rainfall.

If an area washes out after this work has been properly completed and approved by the Engineer, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and BFM. This replacement will be paid for as additional work using the applicable pay items.

If an area washes out for reasons attributable to the Contractor's operation or failure to take proper precautions, replacement will be at the Contractors expense.

The Engineer will inspect the seeded turf to ensure the end product is well established, in a vigorous growing condition, and contains the species called for in the seeding mixture.

If the seeded turf is not well established at the end of the first growing season, the Contractor will be required to reseed as detailed herein until the turf is well established and approved by the Engineer.

If weeds are determined by the Engineer to cover more than 10 percent of the total area of slope restoration, provide weed control in accordance with subsection 816.03.J of the Standard Specifications for Construction. Weed control will be at no cost to the contract.

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:

Pay Item	Pay Unit
Slope Restoration, Bonded Fiber Matrix	Square Yard
Slope Restoration, High Velocity Mulch Blanket.....	Square Yard

Slope Restoration, Bonded Fiber Matrix and **Slope Restoration, High Velocity Mulch Blanket** will be measured by area in square yards in place. Payment includes all labor, materials, and equipment required to perform the work.

WCDPS
(08-26-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
HYDRANT ADJUST

1 of 1

Description

This work shall consist of adjusting an existing fire hydrant to provide the required clearance between the nozzles and the proposed grade all in accordance with Section 823 of the 2020 MDOT Standard Specifications for Construction and with local standards and specifications.

All materials used shall conform to the size and type required to accommodate the existing hydrant and shall be approved by the local regulatory agency.

Construction

Hydrants in Sidewalk Areas: Where called for on the plans, or as directed by the Engineer, adjacent sidewalk shall be removed to provide a 4 foot × 4 foot minimum opening in order to make the adjustment. The removal procedure shall include full depth saw cutting and shall be done in such a manner that the adjacent sidewalk is not damaged.

Any damage occurring to adjacent pavements (e.g., sidewalk, paved maintenance strips, drives, ramps, etc.) during sidewalk removal shall be replaced in kind at the Contractor’s expense.

Hydrants Outside of Sidewalk Areas: The area adjacent to hydrants being adjusted outside of sidewalk areas shall be restored in kind with suitable materials, as approved by the Engineer.

Measurement and Payment

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

Pay Item	Pay Unit
Hydrant, Adjust.....	Each

The contract unit price each shall be payment in full for furnishing all materials, labor and equipment required to complete the work as specified. The removal and replacement of sidewalk, excavation, backfilling, turf restoration and disposal of surplus material will not be paid for separately.

MICHIGAN INTERNATIONAL TECHNOLOGY CENTER

SPECIAL PROVISION
FOR
SPRINKLER SYSTEM MODIFICATION

OHM:mrl

1 of 2

09-06-22

a. Description. The work shall consist of adjusting or relocation of sprinkler heads and placement of irrigation system piping as directed by the Engineer. This work shall be done in accordance with the 2020 Michigan Department of Transportation Standard Specifications for Construction and as described herein.

b. Materials and Construction Methods. Relocation of sprinkler head or valve shall include removal of the existing head/valve and replacement of the same or, at the Contractor's expense, furnishing a new head/valve of equal size and material in the location as directed by the Engineer. Piping shall be installed 24 inches below proposed finished grade with new couplings and fittings to accommodate sprinkler heads.

Adjust Sprinkler Head involves raising or lowering an existing sprinkler head at its current location to meet the proposed finish grade. Adjust Sprinkler Head also involves the work to temporary relocate sprinkler heads and piping for construction activities.

All sprinkler system replacement items shall be compatible with the existing equipment and shall be of equal or better quality.

The Contractor shall contact the property owner and coordinate this work prior to disturbing any irrigation system. After completion, owner signoff is required before payment will be made on these items of work.

c. Measurement and Payment. The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item).

<u>Pay Item</u>	<u>Pay Unit</u>
Irrigation Piping	Foot
Relocate Sprinkler Head.....	Each
Adjust Sprinkler Head.....	Each
Sprinkler Head.....	Each

Adjust Sprinkler Head shall be measured for each sprinkler required to be raised or lowered at its current location. This price shall be payment in full for all materials, equipment, and labor required to perform the work as described, and shall include all additional piping, couplings and fittings necessary to raise or lower sprinkler head to finished grade without moving its location. Adjust Sprinkler Head shall be measured for each sprinkler that is temporarily relocated for construction activities as directed by the Engineer. The price shall be payment in full for all materials, equipment, and labor required to perform the work and shall include the piping, couplings, and fittings associated with the temporarily relocated sprinklers.

Irrigation Piping shall be measured from the center of sprinkler head to the point of disturbance

and will be measured by the unit foot, and paid for at the contract unit price per foot, which price shall be payment in full for all materials, equipment, and labor required to complete the work as described, including all necessary couplings and fitting to make the required connections.

Relocate Sprinkler Head shall be measured by each sprinkler head removed from the system and placed at a new permanent location, and paid for at the contract unit price per each. This price shall be payment in full for all materials, equipment, and labor required to complete the work as described, and shall include a new sprinkler head (if required). Additional piping, couplings, and fittings necessary to install the sprinkler head at the finished grade will be paid separately as **Irrigation Piping**.

Sprinkler Head shall be measured by each new sprinkler head placed in the system at a new permanent location, and paid for at the contract unit price per each. This price shall be payment in full for all materials, equipment, and labor required to complete the work as described. Additional piping, couplings, and fittings necessary to install the sprinkler head at the finished grade will be paid separately as **Irrigation Piping**. The sprinkler head shall match the type and size on the existing system.

WCDPS
(08-27-2021)

Wayne County Department of Public Services
SPECIAL PROVISION
FOR
GRADING REQUIREMENTS FOR
GRANULAR AND POROUS MATERIALS

1 of 1

Description

Granular Material Class I, II and III, shall be in accordance with Section 902 of the 2020 MDOT Standard Specifications for Construction and as specified herein.

Materials

Materials which may be cementitious or not suitable for water percolation shall not be used. At the direction of the Engineer, the aggregate supplier will furnish the test results (at no expense to Wayne County) for permeability (per ASTM D 2434) and a chemical analysis showing that the material is non-cementitious. Foundry sand, bottom ash and fly ash are prohibited.

Silica sand may be used for Class II and Class III granular materials only.

Porous Backfill Class III Modified shall consist of gravel, sand, stone, or blast furnace slag meeting the following grading requirements:

% Passing 2 1/2 inch Sieve.....	100
% Passing 1 inch Sieve.....	60-100
% Passing #100 Sieve.....	0-45
% Loss by Washing.....	0-15

Wayne County Department of Public Services
WCDPS
(08-27-2021)
SPECIAL PROVISION
FOR
FIBER JOINT FILLER FOR CONCRETE CONSTRUCTION

1 of 1

Description

The Fiber Joint Filler for concrete construction shall be in accordance with Section 914 of the 2020 MDOT Standard Specifications for Construction, and Wayne County Standard Plans P series, and as specified herein.

Delete subsections 7.5.1, 7.5.2 and 7.5.3 of Section 7.5 (Asphalt Content) of ASTM D545 and replace with the following:

Test Procedure:

From the test specimens prepared as described in 6.1, cut narrow strips of sufficient size to place in centrifuge type extractor. Oven dry the strips at $220 \pm 5^\circ$ F to constant weight, then cool. Obtain approximately 100 g. of sample and weigh to nearest 0.1 g. to obtain initial oven dry weight of test strips. Oven dry and obtain the mass of the filter ring. Transfer the test strips to the extractor bowl and cover with a chlorinated solvent, such as trichloroethylene. Allow sufficient time for the solvent to penetrate the test strips (not over 1 hour). Extract the asphalt using sufficient solvent additions (not less than three) so that the extract is essentially clear (color of weak tea).

After extraction, oven dry the test strips and filter ring at $220 \pm 5^\circ$ F for one hour. Cool and weigh test strips and filter ring to nearest 0.1 g. to obtain oven dry weights.

Calculate the percentage asphalt content by weight on an oven dry basis as follows:

$$\text{Asphalt, \%} = \frac{w_1 - w}{w_1} \times 100$$

where:

w_1 = initial oven dry weight of test strips

w = oven dry weight of extracted fiber +
(oven dry weight of filter ring after extraction – oven dry initial weight of filter ring).

APPENDIX B
GEOTECHNICAL REPORTS

5 Mile Road Corridor Design Project Napier Road to Beck Road – January 4, 2016

5 Mile Corridor Project Ridge Road: 5 Mile Road to Halyard Road – September 26, 2022



Report on Geotechnical Investigation

**5 Mile Road Corridor
Design Project
Napier Road to Beck Road
Northville Township and
Plymouth Township,
Michigan**

Latitude 42.393558° N
Longitude 83.529866° W

Prepared for:

OHM Advisors
34000 Plymouth Road
Livonia, Michigan 48150

G2 Project No. 143288
January 4, 2016



CONSULTING
GROUP

January 4, 2016

Mr. George Tsakoff
OHM Advisors
34000 Plymouth Road
Livonia, Michigan 48150

RE: Report of Geotechnical Investigation
5 Mile Road Corridor Design Project
Napier Road to Beck Road
Northville Township and Plymouth Township, Michigan
G2 Project No. 143288

Dear Mr. Tsakoff:

In accordance with your request, we have completed a geotechnical investigation for the proposed 5 Mile Road Corridor Design project between Napier Road and Beck Road in Plymouth Township and Northville Township, Michigan. This report presents the results of our observations and analyses and includes recommendations and construction considerations relative to the proposed site improvements.

We appreciate the opportunity to be of service to you and look forward to discussing our findings. In the meantime, if you have any questions regarding this report or any other matter pertaining to the project, please call us.

Sincerely,

G2 Consulting Group, LLC

Jeffrey M. Hayball, P.E.
Project Engineer

Noel J. Hargrave-Thomas, P.E.
Project Consultant

Jason B. Stoops, P.E.
Associate / Project Manager

JMH/NJHT/ljv

Enclosures

g2consultinggroup.com

Headquarters	1866 Woodslee St	Troy, MI 48083	P 248.680.0400	F 248.680.9745
Ann Arbor	1595 Eisenhower Pl	Ann Arbor, MI 48108	P 734.390.9330	F 734.390.9331
Chicagoland	1186 Heather Dr	Lake Zurich, IL 60047	P 847.353.8740	F 847.353.8742



EXCECUTIVE SUMMARY

We understand the proposed project includes widening the two-lane road of 5 Mile between Napier Road and Beck Road in Plymouth Township and Northville Township, Michigan. An existing bridge along 5 Mile Road over the existing Johnson Drain west of an existing railroad and west of Ridge Road will be reconstructed and designed in accordance with AASHTO and MDOT LRFD Bridge design specifications. In addition, four (4) new single mast-arm traffic signal foundations will be constructed along the existing alignment in accordance with MDOT design procedures. Finally, new underground utility crossings will be installed at Johnson Drain and the railroad using jack-and-bore or directional drilling methods.

It is our understanding the existing bridge over the Johnson Drain will be replaced. Two options are being considered for the proposed bridge replacement: a single span bridge with concrete abutments constructed on conventional foundations or a single span bridge built on a geosynthetic reinforced soil (GRS) wall supported on reinforced soil foundations (RSF). Groundwater was encountered at depths ranging from 6-1/2 to 9-1/2 feet within the borings performed within the vicinity of the proposed bridge. We anticipate excavations for the proposed abutment and associated foundations will extend to depths up to 16 feet below existing grades. Therefore, in order to construct the proposed abutment and associated foundations, we recommend the site be dewatered prior to the start of excavation operations. We recommend the proposed concrete bridge abutments be supported on conventional spread and strip footings bearing on the native medium compact silty sand at a minimum depth of 3-1/2 feet below the bottom elevation of the Johnson Drain to protect against frost heave and below the calculated scour depth. Alternatively, the proposed bridge can be constructed on geosynthetic reinforced soil (GFS) supported on reinforced soil foundations (RSF) bearing on the medium compact silty sand below the calculated scour depth. Foundations should be designed for a net allowable bearing capacity of 3,000 psf bearing in the medium compact silty sand.

Based on MDOT standards, the minimum foundation for the traffic signals must consist of a 42-inch diameter drilled concrete pier foundation. The recommendations for each of the proposed single-mast arm foundations are presented in the table below:

Soil Boring	Location	Foundation Depth
B-22	SW Corner of Ridge Road and 5 Mile Road	19-1/2 feet
B-23	NE Corner of Ridge Road and 5 Mile Road	11-1/2 feet
B-24	SW Corner of Beck Road and 5 Mile Road	14 feet
B-25	NE Corner of Beck Road and 5 Mile Road	14 feet

It is our understanding the existing roadway alignment will be reconstructed and widened from one lane of traffic to allow for 2 lanes of traffic each way. In addition, we understand the proposed pavement section for the proposed reconstruction will consist of 10 inches of MDOT P1 modified Portland cement concrete supported on 12 inches of MDOT 21AA dense graded material. We recommend completely removing the existing bituminous concrete and Portland cement concrete (where present) and cutting the grade to the proposed subgrade elevation. We anticipate undercutting of the silt and clayey sand fill with trace organic matter will be required.

Do not consider this summary 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 proposed project includes widening the two-lane road of 5 Mile between Napier Road and Beck Road in Plymouth Township and Northville Township, Michigan. An existing bridge along 5 Mile Road over the existing Johnson Drain west of an existing railroad and west of Ridge Road will be reconstructed and designed in accordance with AASHTO and MDOT LRFD Bridge design specifications. In addition, four (4) new single mast-arm foundations will be constructed along the existing alignment in accordance with MDOT design procedures. Finally, new underground utility crossings will be installed at Johnson Drain and the railroad using jack-and-bore or directional drilling methods.

SCOPE OF SERVICES

The field operations, laboratory testing, and engineering report preparation were performed under the 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 consists of the following specific items:

1. We drilled a total of thirty six (36) soil borings. Pavement core/hand auger soil borings C-1 through C-11 were performed within the existing pavements along 5 Mile Road between Napier Road and Beck Road and extended to a depth of 5 feet below existing grades. Hand auger soil borings B-12 through B-18, B-21, and B-26 through B-34 were performed within the shoulder/Right-Of-Way along 5 Mile Road and extended to depth of 5 feet below grade. Soil borings B-35 and B-36 were performed along Ridge Road and extended to a depth of 5 feet each. Soil borings B-19 and B-20 were performed at the proposed bridge replacement over the Johnson Drain and extended to depths of 40 and 45 feet, respectively. Soil borings B-22 through B-25 were performed at the proposed new mast-arm foundation locations and were proposed to extend to a depth of 25 feet below grade. However, soil boring B-22 was terminated at an approximate depth of 15 feet due to auger refusal. We measured the existing pavement section materials (bituminous concrete, Portland cement 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, natural moisture content, organic matter content (loss-on-ignition), grain-size distribution, Atterberg Limits, and unconfined compressive strength determinations.
3. We prepared this engineering report. Our report includes recommendations for new bridge foundation design and construction, mast arm traffic signal foundation design and construction, new pavement construction, pavement rehabilitation, and other construction considerations related to the proposed site improvements.

FIELD OPERATIONS

OHM Advisors, Inc. selected the number, depth, and location of the soil borings. The soil borings were located in the field by a G2 representative by measuring from existing site features and landmarks using conventional taping methods. The approximate soil boring locations are shown on the Soil Boring Location Plan, Plate Nos. 1 through 6. Ground surface elevations were provided by OHM Advisors, Inc. using conventional surveying methods.

We used an electrically 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.

The soil borings were drilled using a truck-mounted rotary drilling rig. Continuous flight 2-1/4 inch inside diameter hollow-stem augers were used to advance the boreholes to the explored depth. Soil samples were obtained at intervals of 2-1/2 feet within the upper 10 feet and at intervals of 5 feet thereafter within borings B-19 and B-20. However, soil samples were taken at intervals of 2-1/2 feet



within borings B-22 through B-25. The samples were obtained by the Standard Penetration Test method (ASTM D 1586), which involves driving a 2-inch diameter split-spoon sampler into the soil with a 140-pound weight falling 30 inches. The sampler is generally driven three successive 6-inch increments with the number of blows for each increment recorded. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N). The blow counts for each 6-inch increment and the resulting N-value are presented on the soil boring logs.

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 and 5 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 and 5 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.

The soil samples were placed in sealed containers and brought to our laboratory for testing and classification. During field operations, the driller and a G2 professional engineer maintained logs of the subsurface conditions, including changes in stratigraphy and observed groundwater levels. The final boring logs are based on the field boring logs supplemented by laboratory soil classification and test results. The boreholes were backfilled with auger cuttings and cold patch (as necessary) upon completion of drilling operations.

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 Atterberg limits, grain-size distribution, natural moisture content, organic matter content (loss-on-ignition), dry density, and unconfined compressive strength determinations. Atterberg limits were determined in accordance with ASTM D 4318 "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils". Grain-size distribution was determined in general conformance with ASTM D 422 method of testing. The organic matter content (loss-on-ignition, LOI) of representative samples was determined in accordance with ASTM Test Method D 2974, "Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils". The unconfined compressive strengths were determined by ASTM Test Method D 2166 and using a spring loaded hand penetrometer. Per ASTM Test Method D 2166, the unconfined compressive strength of cohesive soils is determined by axially loading a small cylindrical soil sample under a slow rate of strain. The unconfined compressive strength is defined as the maximum stress applied to the soil sample before shear failure. If shear failure does not occur prior to a total strain of fifteen percent, the unconfined compressive strength is defined as the stress at a strain of fifteen percent. 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. 37 in the Appendix. The grain size analyses are presented in the Appendix as Grain Size Distribution Figure Nos. 38 through 40. The Unconfined Compressive Strength Tests are shown graphically on Figure Nos. 41 and 42 in the Appendix. 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

The existing pavements along 5 Mile Road between Napier Road and Beck Road consisting of bituminous concrete. Low to moderate severity fatigue, transverse, and longitudinal cracking is present along approximately less than half of the pavement surface with some select areas exhibiting high severity fatigue cracking. It appears some crack sealing, full depth replacement patching, and cold patching have been performed in the past.

The roadway alignment is crowned, allowing surface runoff water to drain into Portland cement curbs and gutters along approximately 1/4 mile of 5 Mile Road west of Beck Road and/or a gravel shoulder present along the remaining portion of the roadway alignment.

EXISTING SOIL CONDITIONS

5 Mile Road Alignment (Borings C-1 through C-11, B-12 through B-18, B-21, and B-26 through B-36)

Bituminous concrete is present at the ground surface of borings C-1 through C-11 and ranges in thickness from 3 to 15 inches. Portland cement concrete underlies the bituminous concrete at borings C-6 through C-11 and ranges in thickness from 6 to 9-1/4 inches. An aggregate base, consisting of slag sandy gravel with trace silt and crushed limestone sandy gravel with trace silt, underlie the bituminous concrete and/or Portland cement concrete within borings C-1 through C-4 and C-9 and ranges in thickness from 6 to 13-1/2 inches in thickness. Grain-size analyses were performed on selected samples of the aggregate base obtained from borings C-1 and C-9. Test results indicate the base courses do not meet the gradation requirements for MDOT 21AA material due to an insufficient amount of material greater than the No. 4 sieve (gravel).

Approximately 2 to 12 inches of topsoil are present at the ground surface of borings B-29 and B-32 through B-34. Shoulder gravel fill, consisting of sandy gravel with trace silt, and/or sand and gravel with little to trace silt is present at the ground surface of borings B-12 through B-18, B-21, B-26 through B-28, B-30, and B-31 and ranges in thickness from 6 to 24 inches in thickness. Grain-size analyses were performed on selected samples of the shoulder gravel fill obtained from borings B-12, B-18, B-26, and B-28. Test results indicate the shoulder gravel fill does not meet the gradation requirements for MDOT 21AA material due to an excessive amount of material finer than the No. 200 sieve (silty and clay). Approximately 9 inches of crushed slag aggregate base material is present below the shoulder gravel within borings B-12 and B-17.

Granular fill soils, consisting of sandy gravel, gravelly sand, silty sand, silt, and clayey sand with trace organic matter, underlies the pavement section, topsoil, and shoulder gravel fill within borings C-1 through C-3, C-9 through C-11, B-12 through B-18, B-26, and B-32 through B-36 and extend to depths ranging from 2 to 3-1/2 feet below existing grades. The granular fill soils are generally very loose to medium compact with Dynamic Cone Penetrometer (DCP) Test N-values ranging from 3 to 19 blows per 1-3/4 inches driven and organic matter contents ranging from 2.7 to 9.8 percent. However, the sandy gravel fill within the upper 3 feet of borings B-32 and B-34 is compact with DCP Test N-values of 37 and 41 blows per 1-3/4 inches driven.

Native cohesive soils, consisting of silty clay and sandy clay, are present below the pavement section, topsoil, and fill soils of borings C-1 through C-3, C-7, C-8, C-10, C-11, B-12, B-13, B-16, B-18, B-29, B-32, and B-32 and extend to depths of 3 and 4 feet below grade within borings B-13 and B-16 and the explored depth of 5 feet within the remaining aforementioned borings. The native cohesive soils are stiff to hard in consistency with natural moisture contents ranging from 14 to 23 percent, a liquid limit of 36 percent, a plasticity index of 16 percent, and unconfined compressive strengths ranging from 2,000 to 9,000 pounds per square foot (psf).

Native granular soils, consisting of sand, silty sand, and gravelly sand, underlie the native cohesive soils, fill soils, topsoil, and pavement section within the remaining borings and extend to the explored depth



of 5 feet. The native granular soils are loose to medium compact with DCP Test N-values ranging from 7 to 29 blows per 1-3/4 inches driven.

Johnson Drain Bridge (Borings B-19 and B-20)

Approximately 11 to 12 inches of bituminous concrete is present at the ground surface of the soil borings underlain by 12 to 13 inches of aggregate base. Granular fill soils, consisting of sand and clayey sand with trace organic matter underlie the pavement section and extend to an approximate depth of 7 feet below grade. Peat is present below the granular fill within boring B-20 and extends to an approximate depth of 9-1/2 feet. Alternating strata of native cohesive soils, consisting of silty clay and sandy clay, and native granular soils, consisting of silt, sandy gravel, sand, silty sand, and clayey sand, underlie the granular fill and peat within the borings and extend to the explored depths of 40 and 45 feet.

The granular fill soils are loose to medium compact with SPT N-values ranging from 6 to 15 blows per foot (bpf) and an organic matter content of 7.8 percent. The peat is very loose in compactness with a SPT N-value of 2 bpf, a moisture content of 89 percent, and an organic matter content of 21.9 percent. The native silty clay soils are generally very stiff to hard in consistency with natural moisture contents ranging from 7 to 17 percent, a dry density of 118 pcf, and unconfined compressive strengths ranging from 4,650 to 9,000 psf. However, the native silty clay within the upper 13 feet of boring B-19 is medium in consistency with a natural moisture content of 19 percent, dry densities of 108 and 114 pcf, and unconfined compressive strengths of 1,500 and 1,600 psf. The native granular soils are generally medium compact to very compact with SPT N-values ranging from 16 to 50 blows per 3 inches driven. However, the native sand within the upper 13 feet of boring B-20 is loose in compactness with a SPT N-value of 8 bpf.

Single Mast Arm Foundations (Borings B-22 through B-25)

Approximately 8 to 14 inches of topsoil is present at the ground surface of the borings. Granular fill soils, consisting of silty sand and clayey sand, underlie the topsoil within borings B-22 and B-23 and extend to an approximate depth of 3 feet below grade. Silty clay fill is present below the topsoil of borings B-24 and B-25 and extends to depths ranging from 5-1/2 to 6 feet. Alternating strata of native cohesive soils, consisting of silty clay, sandy clay, and clayey silt, and native granular soils, consisting of silty sand, clayey sand, gravelly sand, sand, sandy gravel, and cobbles, underlie the fill soils within the borings and extend to the explored depths of 15 and 25 feet.

The granular fill soils are loose in compactness with SPT N-values of 6 and 9 bpf. The silty clay fill is stiff to hard in consistency with moisture contents ranging from 12 to 15 percent and unconfined compressive strengths ranging from 2,000 to 9,000 psf. The native granular soils are generally medium compact to very compact with SPT N-values ranging from 11 to 50 blows per 1 inch driven. However, the native silty sand within boring B-22 between 8 to 13-1/2 feet is loose in compactness with SPT N-values of 8 and 9 bpf. The native cohesive soils are generally medium to very stiff in consistency with natural moisture contents ranging from 11 to 16 percent, dry densities ranging from 109 to 133, and unconfined compressive strengths ranging from 1,030 to 4,010 psf. However, the native silty clay within the upper 10-1/2 feet of boring B-23 and below an approximate depth of 13 feet within boring B-24 is very stiff to hard in consistency with moisture contents ranging from 10 to 20 percent, dry densities ranging from 124 to 144 pcf, and unconfined compressive strengths ranging from 4,000 to 9,000 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 Plans, Plate Nos. 1 through 7, Soil Boring Logs, Figure Nos. 1 through 36, Atterberg Limits Results, Figure No. 37, Grain-Size Distribution, Figure Nos. 38 through 40, Unconfined Compressive Strength Test, Figure Nos. 41 and 42, and Photographic Documentation, Figure Nos. 43 through 48, are presented in the Appendix. The soil profiles described above are generalized descriptions of the conditions encountered at the boring locations. General Notes defining the nomenclature used on the boring logs and elsewhere in this report are presented on Figure No. 49.

GROUNDWATER CONDITIONS

Groundwater observations were made during and upon completion of drilling operations. Groundwater was observed within borings B19, B-20, and B-22 through B-25 during drilling operations at depths ranging from 5-1/2 to 9-1/2 feet. Upon completion of drilling operations, groundwater was measured at depths ranging from 5 to 19 feet within borings B-19, B-20, and B-22 through B-25. No measurable groundwater was observed within the remaining 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 also 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.

JOHNSON DRAIN BRIDGE RECOMMENDATIONS (Borings B-19 and B-20)

General

It is our understanding the existing bridge over the Johnson Drain will be replaced. Two options are being considered for the proposed bridge replacement: a single span bridge with concrete abutments constructed on conventional foundations or a single span bridge built on a geosynthetic reinforced soil (GRS) wall supported on reinforced soil foundations (RSF). Site grades at the ground surface along the existing bridge range in elevation from 838 to 840 feet. The bottom elevation of the Johnson Drain is generally 827.3 feet.

Site Preparation and Earth Work Recommendations

We anticipate earthwork operations will consist of excavating the existing abutment backfill, excavating for the new abutment foundations, backfilling the new abutments, and preparing the bridge approach road subgrades. We recommend all earthwork operations be performed in accordance with comprehensive specifications and be observed in the field by qualified technical personnel working under the direction of a professional engineer.

The existing soils are generally considered suitable for support of road embankments and approach pavements. All vegetation, any surficial or buried organic soils, and any unsuitable existing fill soils should be removed in their entirety from within the areas to receive embankment fills or abutment backfills. The peat present beneath the existing roadway on the east side of the Johnson Drain is not suitable for support of the embankment fill or the proposed abutment. Therefore, the peat must be completely removed and replaced with engineered fill.

After excavating the existing abutment backfill and peat soils, the exposed subgrade should be visually evaluated for unstable and/or unsuitable soil conditions. Any remaining unstable or unsuitable areas noted should be removed and replaced with engineered fill. We anticipate site dewatering will be required to excavate to the required foundation depths. The dewatering system must be installed and the groundwater level lowered prior to excavation operations.



Engineered fill should be free of organic matter, frozen soil, clods, or other harmful material. We recommend a soil, which meets the requirements of MDOT Class II granular material, be used as backfill for the abutments. The fill soils should be placed in uniform horizontal layers that are not more than 9 inches in loose thickness. The engineered fill should be compacted to achieve a density of at least 95 percent of the maximum dry density as determined by the Modified Proctor compaction test (ASTM D 1557). All engineered fill material should be placed and compacted at approximately the optimum moisture content. Frozen soil should not be used as fill, nor should fill be placed on a frozen subgrade.

Temporary Excavation and Slope Recommendations

Groundwater was encountered at depths ranging from 6-1/2 to 9-1/2 feet within the borings performed within the vicinity of the proposed bridge. We anticipate excavations for the proposed abutment and associated foundations will extend to depths up to 16 feet below existing grades. Therefore, in order to construct the proposed abutment and associated foundations, we recommend the site be dewatered prior to the start of excavation operations. Site dewatering with a shallow well point system is recommended to lower the ground water a minimum two feet below the proposed bottom excavation elevation. Once construction operations are completed to above the encountered groundwater level, the dewatering system may be removed.

Where sloped excavations are to be made, temporary uncharged construction slopes may be cut with grades as steep as 2 horizontal to 1 vertical (2H:1V) within very loose granular soils or peat, 1-1/2H:1V within the loose to medium compact granular soils and stiff native cohesive soils, and 1H:1V within very stiff to hard cohesive soils. Where groundwater seepage is encountered, slopes may be cut with grades as steep as 3H:1V. Where sloped excavations are used, the tops of the slopes should be barricaded to prevent vehicles and storage loads within five feet of the tops of the slopes. Berms are recommended along the tops of slopes as necessary to prevent runoff water from entering the excavations and eroding the slope faces.

Where sloped excavations are not possible, shoring will be required to support vertical cuts. For design of cantilevered shoring or shoring with a single row of bracing, a triangular distribution of lateral earth pressure may be used. It may be assumed that the retained soils with a level surface behind the cantilevered shoring will exert a lateral pressure equal to that developed by a fluid with a density of 35 pcf ($K_a = 0.29$) for soils above water level. Soils below the water level should be modeled as a fluid with a density of 85 pcf. If construction traffic or material storage is allowed within 10 feet of the excavation, a uniform lateral pressure of 60 pounds per square foot should be added to the design lateral loads.

Due to the presence of the Johnson Drain, temporary cofferdams will likely be required to reduce water infiltration into foundation excavations for the proposed abutments and to facilitate construction in dry conditions. The cofferdam(s) may consist of interlocking steel sheet piling. The preferred type of sheet piling consists of hot-rolled steel sheets, since the tight interlocks will not leak as much as cold-rolled steel sheet piling interlocks; however, the type of sheet piling may be left to the discretion of the contractor with the understanding that additional internal dewatering will be required for cold-rolled sheeting. Since the retained soils will not be drained, cofferdams should be designed to include a hydrostatic load as described above for shoring design.

The design of temporary cofferdams or shoring is typically the responsibility of the contractor; however, we recommend that the design of the cofferdam(s) or shoring be developed by a registered professional engineer with substantial experience in geotechnical engineering with respect to these types of structures. If the cofferdam(s) include temporary bracing, the top elevation, tip elevation, and alignment of the steel sheet piling must be designed to prevent interference with new foundation locations.

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 an 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 roadways or utilities to avoid undermining.

Bridge Foundation Recommendations

We understand the elevation at the bottom of the Johnson Drain is 827.3 feet. Given the existing soil conditions present at the anticipated foundation depths, we recommend the proposed concrete bridge abutments be supported on conventional spread and strip footings bearing on the native medium compact silty sand at a minimum depth of 3-1/2 feet below the bottom elevation of the Johnson Drain to protect against frost heave and below the calculated scour depth. Alternatively, the proposed bridge can be constructed on geosynthetic reinforced soil (GFS) supported on reinforced soil foundations (RSF) bearing on the medium compact silty sand below the calculated scour depth. Foundations should be designed for a net allowable bearing capacity of 3,000 psf bearing in the medium compact silty sand. We recommend a G2 engineer be on site during construction to observe the excavations, measure the bearing depths, and verify the adequacy of the bearing soils.

If the recommendations outlined in this report are adhered to, total and differential settlements for the completed structure should be within 1 inch and 1/2 inch, respectively. We expect settlements of these magnitudes are within tolerable limits for the type of structure proposed.

Geosynthetic Reinforced Soil Wall Recommendations

A geosynthetic reinforced soil (GRS) wall is being considered for support of the new single span bridge over the Johnson Drain. At the time of this report, the top and bottom elevations of the proposed retaining wall were not available; however, we anticipate the bottom of the retaining wall will be near the Johnson Drain bottom elevation of 827.3 feet and the top of the retaining wall will be near or at an approximately elevation of 837 to 838 feet, resulting in an approximately 10 to 11 feet high retaining wall.

Based on the soil borings, the proposed bearing soils for the wall are expected to consist of medium compact native silty sand. In order to maintain drained conditions behind the retaining wall, we recommend free-draining granular soils with less than 10 percent fines (minus 200 sieve) be used as backfill within the reinforced zone for the abutment walls. We do not anticipate the existing granular soils or cohesive soils can be reused in the reinforced soil zone. Granular soils can be compacted with less effort than cohesive soils and will provide a higher shear resistance for imbedded geogrid. The granular soils should be compacted to 95 percent of the maximum dry density as determined by modified Proctor. Additionally, a granular drainage layer and drain tile should be installed behind the GRS units. The drain tile should be connected to outlets every 40 feet.

Based on the expected soil conditions for retained and reinforced zones for the retaining wall, we recommend the following soil parameters for geosynthetic reinforced soil walls:

Wall Element	Design Friction Angle	Total Unit Weight (pcf)
Reinforced Soil Zone	32	110
Retained Soil Zone	28	120

Lateral earth pressures are significantly influenced by the type and intensity of backfill compaction. We recommend thin lifts (approximately 6 inches per lift) of backfill be placed and relatively small compaction equipment be used to compact retaining wall backfill.

It should be noted that the long-term aesthetics of GRS walls are highly dependent on the quality of construction. We strongly recommend that a contractor with a proven record of past retaining wall construction of similar size walls be retained for construction of the proposed GRS retaining walls.



Additionally, a qualified geotechnical engineer or technician should be on site to observe construction of the wall and to perform appropriate testing.

Lateral Loads on Abutments

Conventional abutments should be designed to resist the combined loads from a triangular distribution of lateral earth pressures, a triangular distribution of hydrostatic groundwater pressures, plus uniform and point surcharges from live loads including vehicle traffic and wind. For design of relatively rigid structures, we recommend the lateral soil load be modeled using an at-rest lateral earth pressure. Based on an at-rest condition (K_0), it may be assumed that the retained soils will exert a lateral pressure equal to that developed by a fluid with a density of 60 pcf ($K_0 = 0.5$). It should be assumed that the lateral loads are imposed from the top of the abutment section to the bottom of the footing.

We recommend the use of well-drained, properly compacted fill, consisting of MDOT Class II granular fill material, behind abutments. Abutment drainage should be provided along the base of the heel of abutment footings in accordance with the current approved MDOT Standard Detail.

Soil Analysis for Scour

The D_{50} and D_{84} values of the riverbank and channel sediments were determined by ASTM Test Method D 422 for use in scour analyses. The values are presented below. See Figure No. 40 in the Appendix for complete gradation results.

Location	Soil Type	D_{50} Values	D_{84} Values
SC-37 Bank	Silty Sand	0.168	1.404
SC-38 Channel	Clayey Silt	0.015	0.117

SINGLE MAST ARM FOUNDATION RECOMMENDATIONS

General

Based on MDOT standards, the minimum foundation for the traffic signals must consist of a 42-inch diameter drilled concrete pier foundation. The foundation depth depends on the average N-values or undrained shear strength of the supporting soils as described in the MDOT document SIG-DESIGN-284-A "Traffic Signal Mast Arm Pole Foundation Design Table". The recommendations for each of the proposed single-mast arm foundations are presented in the table below:

Soil Boring	Location	Foundation Depth
B-22	SW Corner of Ridge Road and 5 Mile Road	19-1/2 feet
B-23	NE Corner of Ridge Road and 5 Mile Road	11-1/2 feet
B-24	SW Corner of Beck Road and 5 Mile Road	14 feet
B-25	NE Corner of Beck Road and 5 Mile Road	14 feet

Construction Considerations

Caving and sloughing of the granular soils will occur during drilling operations for the mast arm drilled pier foundations. In addition, groundwater may be encountered within the drilled pier excavations within the upper 5-1/2 to 9 feet. Therefore, we recommend the contractor come to the site prepared to use temporary telescoping casing, drilling mud, and water, as necessary, to maintain a stable excavation. If groundwater is not controlled with casing, the contractor should add drilling mud and



water to maintain a stable excavation during the remainder of construction operations. A minimum drilling mud head of 6 feet must be continuously maintained above the static groundwater elevation to ensure a stable excavation. If groundwater cannot be controlled with temporary casing, concrete must be placed by tremie method.

When the drilled pier excavation is complete, the anchor bolts should be set and concrete placed until a positive head of concrete has been placed within the casing. This positive head of concrete must be maintained while pulling casing to prevent the infiltration of loose soil outside the casing from contaminating the fresh concrete. Telescoped casing must be removed in the opposite order installed (i.e. from the inside out). This is to minimize lateral movement caused by sloughing soils adjacent to the drilled piers.

To reduce lateral movement of the drilled pier, the contractor must place concrete in intimate contact with undisturbed soil. Any voids or enlargements in the drilled pier shaft excavation should be filled with concrete at the time of drilled pier concrete placement. We recommend using a concrete mix design with a slump of 4 to 6 inches for free fall placement, and 7 to 9 inches for tremie placement, to reduce the potential for concrete arching and to provide a workable material.

We recommend the contractor use a temporary top form, such as sono tube, to form the top portion of the drilled pier. The use of this top form is a very beneficial aid to the correct placement and orientation of the anchor bolts.

UNDERGROUND UTILITY RECOMMENDATIONS

General

It is our understanding underground utility crossings will be performed beneath the existing railroad crossing and the Johnson Drain, both located west of Ridge Road. No information regarding the type or size of the underground utilities that will be installed was not available upon completion of this report. The ground surface elevation at the existing railroad is approximately 844 feet with an anticipated bottom of shaft elevation to be between elevation 830 feet and elevation 835 feet. The bottom elevation of the Johnson Drain is approximately elevation 827.3 feet with an anticipated bottom of shaft elevation to be between elevation 817 feet and elevation 822 feet. In general, we anticipate the new underground utilities to be installed using directional drilling or jack and bore methods as entrance and exit shafts will be typically constructed at the Johnson Drain and railroad crossing.

Soil borings B-19 and B-20 were performed on opposite sides of the Johnson Drain. Soil conditions at the anticipate utility crossing depths at the Johnson Drain consist of loose to medium compact granular fill within the upper 7 feet and underlain by very loose peat or medium silty clay to depths of 9-1/2 to 13 feet. Native loose to medium compact granular soils are present below the native silty clay and peat and extend to the proposed bottom of shaft elevations. Groundwater was encountered at depths of 6-1/2 feet and 9-1/2 feet at the Johnson Drain, corresponding with approximate elevations of 833 feet and 829 feet, respectively. No soil borings were performed within the vicinity of the existing railroad crossing to depths sufficient to evaluate the soil conditions to provide recommendations for the proposed utility crossing. Therefore, we recommend additional soil borings be performed on each side of the existing railroad to a minimum depth of 25 feet each.

Groundwater Control

Groundwater was encountered at depths of 6-1/2 feet and 9-1/2 feet at the Johnson Drain, corresponding with approximate elevations of 833 feet and 829 feet, respectively. Therefore, directional drilling may be most cost effective and feasible. To properly install the proposed utilities by boring and jacking, the access shafts should be dewatered to below the excavation depth and boring and jacking performed with a controlled face. Site dewatering with a shallow well point system is recommended to

lower the groundwater a minimum of two feet below the proposed bottom of excavation elevation. However, if excavation depths are more than 18 feet, a deep well system will be required to dewater the shafts. Once construction operations are completed to above the encountered groundwater level, the dewatering system may be removed.

In addition, any groundwater accumulations from groundwater or surface run-off within these excavations should be controlled with properly constructed sumps at the bottom of the excavation if necessary. Sumps should be installed and allowed to dewater prior to opening large excavations below the original groundwater level. At no time should water be allowed to pond within the excavation.

Directional Drilling

We anticipate the proposed underground utilities will be constructed utilizing directional drilling methods at approximate depths up to 20 feet below grade. In general, native medium compact granular soils are anticipated to be present at the proposed utility depths at the Johnson Drain. Depending on the cutting head location, some difficulty maintaining cutting head alignment may occur if the utilities are constructed near the transition from granular soils to cohesive soils (mixed face condition). However, slight changes maintaining pipeline elevations will not have a significant effect on underground utilities. No cobbles, boulders, or other obstructions were encountered during the drilling operations; however, existing and abandoned utilities crossings should be anticipated.

Jack and Bore Directional Drilling

Jack and bore methods can also be used to install the proposed underground utilities under the Johnson Drain and railroad crossing. Soil conditions at the anticipated utility crossing depths at the Johnson Drain consist of loose to medium compact granular fill within the upper 7 feet and underlain by very loose peat or medium silty clay to depths of 9-1/2 to 13 feet. Native loose to medium compact granular soils are present below the native silty clay and peat and extend to the proposed bottom of shaft elevations. Groundwater was encountered at depths of 6-1/2 feet and 9-1/2 feet at the Johnson Drain, corresponding with approximate elevations of 833 feet and 829 feet, respectively. Jack and bore methods can be employed without significant difficulty relating to subsurface conditions within the anticipated soils provided the site is dewatered prior to the start of excavation operations. Jack and bore work should be performed by an experienced contractor with the resources to provide appropriate designs for the jacking and recovery pits as well as provide the proper equipment to penetrate the anticipated soils. Some face control will be required to control the water bearing granular soils.

Excavations, Slopes, and Shoring

Where sloped excavations are to be made, temporary unsurcharged construction slopes may be cut with grades as steep as 2 horizontal to 1 vertical (2H:1V) within very loose granular soils or peat, 1-1/2H:1V within the loose to medium compact granular soils and stiff native cohesive soils, and 1H:1V within very stiff to hard cohesive soils. Where groundwater seepage is encountered, slopes may be cut with grades as steep as 3H:1V. All excavations should be safely sheeted, shored, sloped, or braced in accordance with MI-OSHA requirements. We recommend that the excavations next to adjacent structures, such as existing utilities or utility poles, be reviewed to make certain the proposed excavation will not adversely affect structural support.

Where sloped excavations are not possible due to existing utilities, pavements, and/or structures, trench box shoring may be used. If a trench box is used, excavation should be performed within the trench box, such that no unsupported vertical cut is allowed to exist. The required trench box shoring system must be designed by a professional engineer.

The tops of slopes should be barricaded to prevent vehicles and storage loads within five feet of the tops of the slopes. If material or equipment is operated near an excavation, shoring and slopes must be designed to resist the additional lateral pressure due to the surcharge loads.

Shaft Backfill

After completion of directional drilling and bore and jack pipe installation, the access shafts may be backfilled. The entire excavation should be backfilled with the imported engineered fill meeting the requirements of MDOT Class III granular backfill. The granular backfill should be placed in loose layers not to exceed 12 inches in thickness and should be mechanically compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor Test (ASTM D1557).

Based on visual soil classification, it was determined that no soils within the alignment of the soil borings would warrant the determination of grain-size distribution for comparison to MDOT Class III soil specifications. Granular soils observed in the soil borings generally do not meet gradation requirements of a MDOT Class III granular material and are therefore unsuitable for re-use as utility backfill.

PAVEMENT RECOMMENDATIONS

General

It is our understanding the existing roadway alignment will be reconstructed and widened from one lane of traffic to allow for 2 lanes of traffic each way. In addition, we understand the proposed pavement section for the proposed reconstruction will consist of 10 inches of MDOT P1 modified Portland cement concrete supported on 12 inches of MDOT 21AA dense graded material.

Pavement Subgrade Preparation

We recommend completely removing the existing bituminous concrete and Portland cement concrete (where present) and cutting the grade to the proposed subgrade elevation. We anticipate the subgrade soils will consist of clayey sand fill with trace organic matter, native granular soils, and native silty clay. All exposed subgrade soils should be evaluated for stability before constructing the new pavement cross-section. After rough grade has been achieved, the exposed subgrade should be thoroughly proof rolled using a heavily loaded, rubber-tired, tandem-axle dump truck. Unsuitable soils or soils exhibiting excessive instability, such as severe rutting, should be removed by undercutting to expose stable soils. Any remaining unstable or unsuitable areas noted should be improved by additional compaction or removed and replaced with engineered fill. We anticipate undercutting of the silt and clayey sand fill with trace organic matter will be required.

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. These areas should have drain tiles installed connecting to catch basins or ditches to remove any groundwater from ponding within the undercut granular soils. 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 Drainage

We recommend edge drains be provided along the pavement edge since they can become a source of water infiltration into the pavement subgrade. Such drains could be connected to nearby catch basins or ditches. In addition, we recommend finger drains be installed at the catch basin locations. A minimum of four (4) finger drains should extend a minimum of 15 feet outward from each catch basin. The



pavement and subgrade should be properly sloped to promote effective surface and subsurface drainage and prevent water from ponding.

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, routine joint maintenance should be performed to prevent early joint deterioration.

GENERAL COMMENTS

We have formulated the evaluations and recommendations presented in this report relative to site preparation, new foundation construction, and new pavement construction on the basis of data provided to us relating to the general location for the proposed pavement improvements. 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 support of the new structures and pavements and other related aspects of the development. No chemical, environmental, or hydrogeological testing or analyses 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 Plans, Plate Nos. 1 through 7. 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 site preparation, foundation, and pavement 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 Plans	Plate Nos. 1 through 7
Soil Boring Logs	Figure Nos. 1 through 36
Atterberg Limit Results	Figure No. 37
Grain Size Distribution	Figure Nos. 38 through 40
Unconfined Compressive Strength Test	Figure Nos. 41 and 42
Photographic Documentation	Figure Nos. 43 through 48
General Notes Terminology	Figure No. 49




Legend

-  Pavement Core/Hand Auger Borings performed by G2 Consulting Group, LLC on October 29, 30, and 31, 2015

Soil Boring Location Plan	
5 Mile Road Corridor Design Project Napier Road to Beck Road Northville Township and Plymouth Township, Michigan	
 CONSULTING GROUP	Project No. 143288
	Drawn by: JMH
	Date: 11-10-15
Scale: NTS	Plate No. 1



Legend

 Pavement Core/Hand Auger Borings performed by G2 Consulting Group, LLC on October 29, 30, and 31, 2015

Soil Boring Location Plan

5 Mile Road Corridor Design Project
Napier Road to Beck Road
Northville Township and
Plymouth Township, Michigan



Project No. 143288

Drawn by: JMH


Date: 11-10-15


Scale: NTS

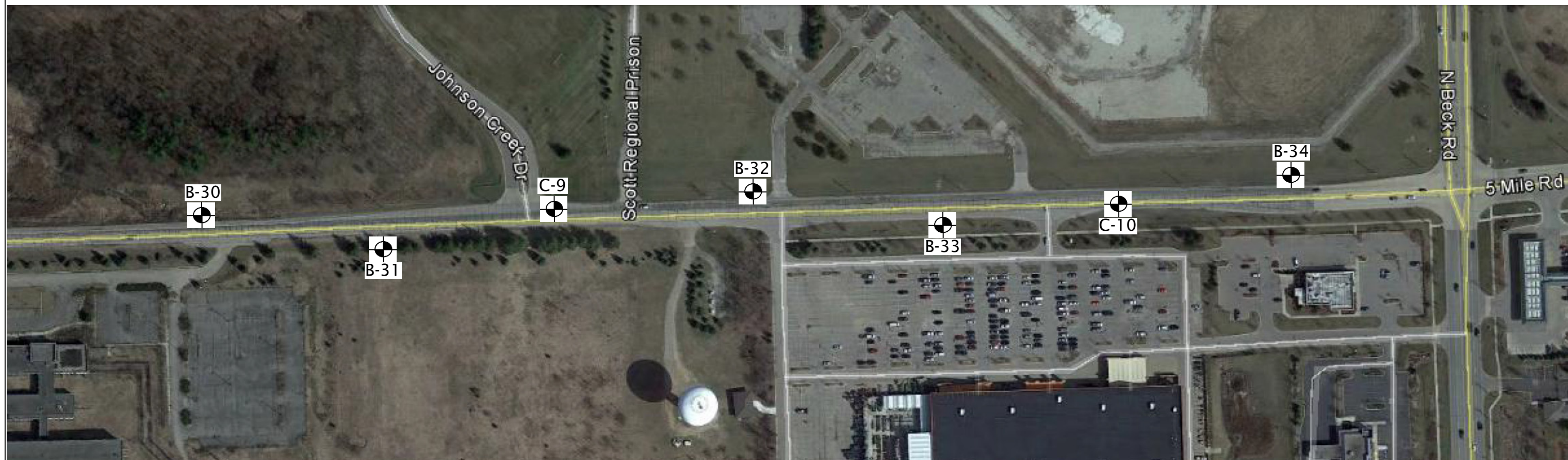
Plate
No. 2




Legend

 Pavement Core/Hand Auger Borings performed by G2 Consulting Group, LLC on October 29, 30, and 31, 2015

Soil Boring Location Plan	
5 Mile Road Corridor Design Project Napier Road to Beck Road Northville Township and Plymouth Township, Michigan	
 CONSULTING GROUP	Project No. 143288
	Drawn by: JMH
	Date: 11-10-15
	Scale: NTS
	Plate No. 3



Legend

 Pavement Core/Hand Auger Borings performed by G2 Consulting Group, LLC on October 29, 30, and 31, 2015

Soil Boring Location Plan

5 Mile Road Corridor Design Project
Napier Road to Beck Road
Northville Township and
Plymouth Township, Michigan



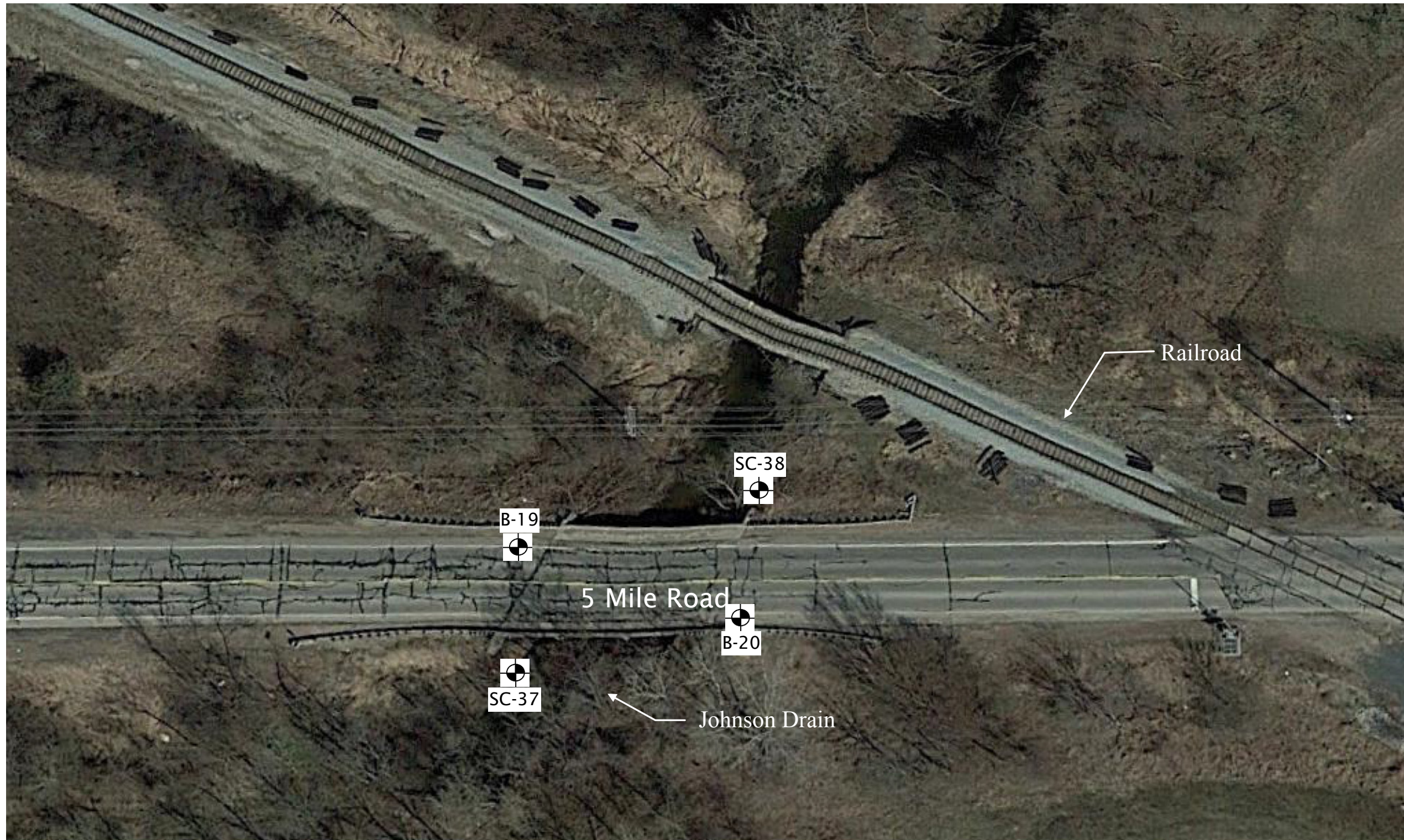
Project No. 143288

Drawn by: JMH


Date: 11-10-15


Scale: NTS

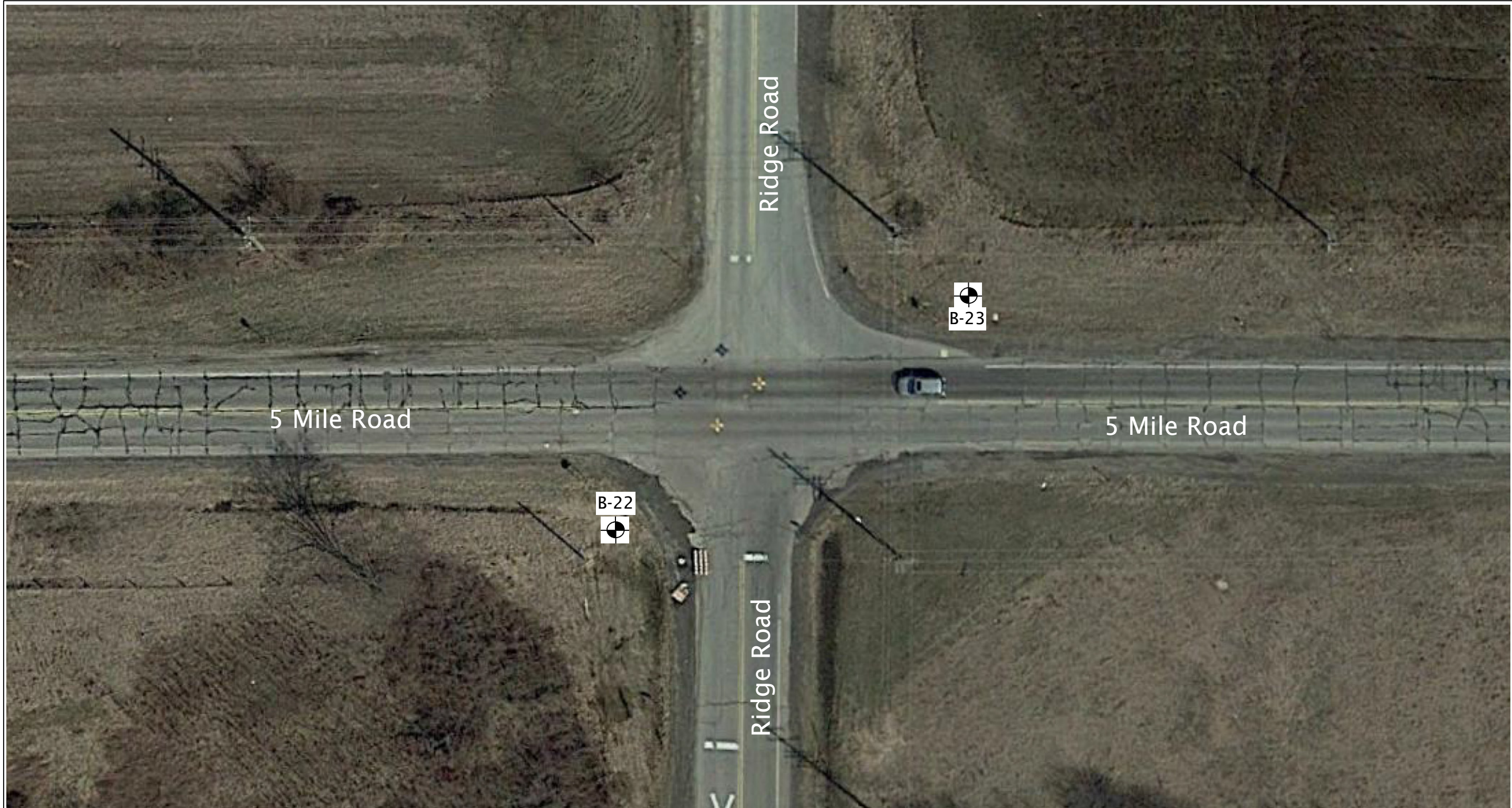
Plate
No. 4




Legend



 Soil Borings performed by Strata Drilling, Inc.
 on October 29, 2015

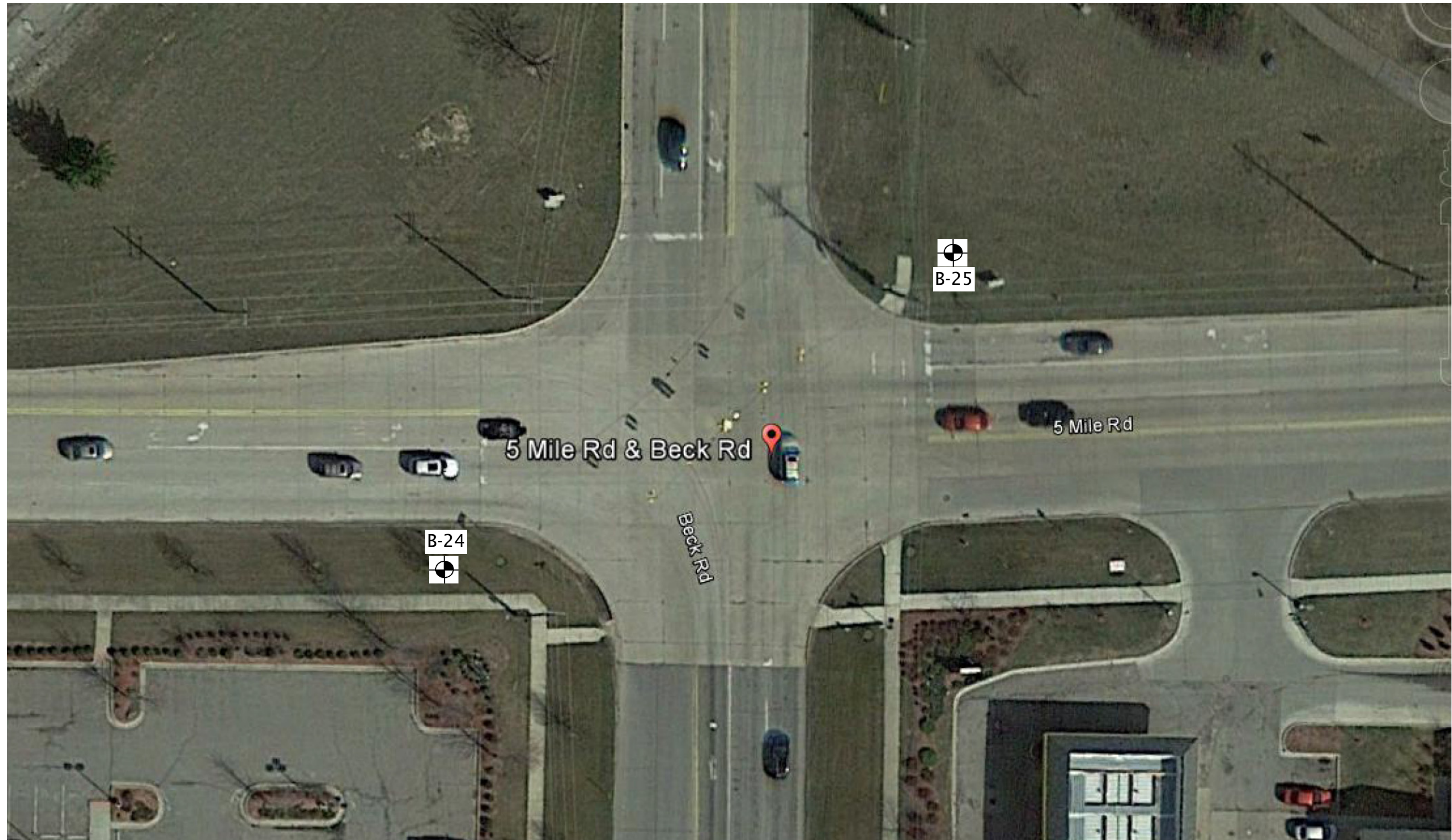
Soil Boring Location Plan 5 Mile Road Corridor Road Design Napier Road to Beck Road Northville Township and Plymouth Township , Michigan	
	Project No. 143288
	Drawn by: JMH
	Date: 11-10-15 Plate Scale: NTS No. 5




Legend

 Soil Borings performed by Strata Drilling, Inc. on October 30, 2015

Soil Boring Location Plan	
5 Mile Road Corridor Design Project Napier Road to Beck Road Northville Township and Plymouth Township, Michigan	
	Project No. 143288
	Drawn by: JMH
	Date: 11-10-15
	Scale: NTS
	Plate No. 6



Legend

 Soil Borings performed by Strata Drilling, Inc. on October 30, 2015

Soil Boring Location Plan

5 Mile Road Corridor Design Project
Napier Road to Beck Road
Northville Township and
Plymouth Township, Michigan



Project No. 143288

Drawn by: JMH

Date: 11-10-15

Scale: NTS

Plate
No. 7

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326378.41 Easting: 13344198.79



Soil Boring No. C-1

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 873.4 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (10-1/2 inches)	0.9	BS-1				
		Crushed Slag Aggregate Base: Dark Brown Sandy Gravel with trace silt (13-1/2 inches)	2.0	BS-2	6	22.2		2500*
868.4		Stiff Brown and Gray Silty Clay with trace sand and gravel	5.0	BS-3	8	22.6		3000*
		End of Boring @ 5 ft						
863.4			10					
858.4			15					
853.4			20					
848.4			25					
843.4			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 13+30.57; Offset 3.4' L
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 1

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326449.89 Easting: 13345296.73



Soil Boring No. C-2

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 858.7 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (12 inches)	1.0	BS-1				
		Crushed Slab Aggregate Base: Dark Brown Sandy Gravel with trace silt (9 inches)	1.8	BS-2	9	20.4		3500*
853.7		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel	5.0	BS-3	11	21.6		4000*
		End of Boring @ 5 ft, Auger Refusal						
848.7			10					
843.7			15					
838.7			20					
833.7			25					
828.7			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 24+30.58; Offset 8.5' R
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 2

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326544.699 Easting: 13346392.05



Soil Boring No. C-3

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 842.3 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (12 inches)	1.0	BS-1				
		Crushed Slag Aggregate Base: Dark Brown Sandy Gravel with trace silt (6 inches)	1.5	BS-2	3	27.3		
		Fill: Very Loose Dark Brown Clayey Sand with trace silt, gravel, and organic matter (Organic Matter Content = 4.5%)	3.0					
837.3		Stiff Brown Sandy Clay with trace silt and gravel	5.0	BS-3	8	14.3		3000*
		End of Boring @ 5 ft						
832.3			10					
827.3			15					
822.3			20					
817.3			25					
812.3			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 35+30.12; Offset 9.0' L
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 3

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326607.95 Easting: 13347490.82



Soil Boring No. C-4

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 837.5 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (11 inches)	0.9	BS-1				
		Crushed Slag Aggregate Base: Dark Brown Sandy Gravel with trace silt (7 inches)	1.5	BS-2	13			
		Fill: Dark Brown Clayey Sand with trace gravel and organic matter (Organic Matter Content = 3.7%) Medium Compact Brown Sand with trace silt and gravel	2.0					
832.5			5.0	BS-3	11			
		End of Boring @ 5 ft, Auger Refusal						
827.5			10					
822.5			15					
817.5			20					
812.5			25					
807.5			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 46+30.58; Offset 8.4' R

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 4

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326703.56 Easting: 13348586.76



Soil Boring No. C-5

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 842.2 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (15 inches)	1.3					
		Medium Compact Brown Sand with trace silt and gravel		BS-1	26			
837.2			5.0	5	BS-2	24		
		End of Boring @ 5 ft						
832.2			10					
827.2			15					
822.2			20					
817.2			25					
812.2			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 57+30.57; Offset 6.5' L

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 5

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326764.61 Easting: 13349688.59



Soil Boring No. C-6

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 843.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (10-1/2 inches)	0.9					
		Portland Cement Concrete (8-1/2 inches)	1.6					
		Loose to Medium Compact Brown Silty Sand with trace gravel		BS-1	8			
838.0			5.0	5	BS-2	12		
		End of Boring @ 5 ft						
833.0			10					
828.0			15					
823.0			20					
818.0			25					
813.0			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 68+34.15; Offset 6.9' R

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 6

Project Name: 5 Mile Corridor Design Project

Soil Boring No. C-7

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326833.11 Easting: 13350786.55

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 858.9 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (10 inches)	0.8					
		Portland Cement Concrete (6 inches)	1.3					
		Very Stiff to Hard Brown Silty Clay with trace sand and gravel		BS-1	16	15.8		8000*
853.9			5.0	5	BS-2	12	17.8	5000*
		End of Boring @ 5 ft						
848.9			10					
843.9			15					
838.9			20					
833.9			25					
828.9			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 79+34.16; Offset 6.0' L
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 7

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. C-8

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326890.63 Easting: 13351833.25

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 857.8 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (12 inches)	1.0					
		Portland Cement Concrete (8 inches)	1.7					
		Very Stiff Brown Silty Clay with trace sand and gravel		BS-1	13	14.2		6000*
852.8			5.0	5	BS-2	12	15.9	4500*
		End of Boring @ 5 ft						
847.8			10					
842.8			15					
837.8			20					
832.8			25					
827.8			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 90+32.37; Offset 8.1' R
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 8

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. C-9

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326945.33 Easting: 13352983.68

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 882.6 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (1-3/4 inches)	0.1					
		Portland Cement Concrete (9-1/4 inches)	0.9	BS-1				
		Crushed Limestone Aggregate Base:	1.5					
		Gray Sandy Gravel with trace silt (7 inches)	2.0	BS-2	4	14.6		
		Fill: Brown Gravelly Sand with trace silt	2.5					
		Fill: Very Loose Black Clayey Sand with trace organic matter (Organic Matter Content = 3.0%)						
877.6		Medium Compact Brown Sand with trace silt and gravel	5.0	BS-3	17			
		End of Boring @ 5 ft						
872.6			10					
867.6			15					
862.6			20					
857.6			25					
852.6			30					

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 101+34.09; Offset 13.7' L

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326971.26 Easting: 13354016.87



Soil Boring No. C-10

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 878.5 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (13 inches)	1.1					
		Portland Cement Concrete (7 inches)	1.7					
		Medium Compact Brown Gravelly Sand with trace silt	3.0	BS-1	18			
873.5		Very Stiff Brown Silty Clay with trace sand and gravel	5.0	BS-2	14	17.8		5000
		End of Boring @ 5 ft						
868.5			10					
863.5			15					
858.5			20					
853.5			25					
848.5			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 111+67.43; Offset 5.3' R

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 10

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. C-11

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326871.52 Easting: 13349390.2

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 840.1 ft	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 (9 inches)	1.0					
		Fill: Loose Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 2.8%)	3.0	BS-1	8	13.1		
835.1		Stiff Brown Silty Clay with trace sand and gravel	5.0	BS-2	8	13.9		2000*
		End of Boring @ 5 ft						
830.1			10					
825.1			15					
820.1			20					
815.1			25					
810.1			30					

Total Depth: 5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 65+44.17; Offset 115.1'L
 * Calibrated Hand Penetrometer

Drilling Method:
 4-inch diameter diamond tipped core barrel;
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 11

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326374.57 Easting: 13344499.89



Soil Boring No. B-12

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 874.2 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with little silt (6 inches)	0.5	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (6 inches)	1.0					
		Crushed Slag Aggregate Base: Dark Brown Sandy Gravel with trace silt (9 inches)	1.8	BS-2	7	21.6		2500*
		Fill: Dark Brown Clayey Sand with trace gravel and organic matter (Organic Matter Content = 3.8%)	2.3					
869.2		Stiff Brown and Gray Silty Clay with trace sand and gravel	5.0	BS-3	8	21.3		3500*
		End of Boring @ 5 ft, Auger Refusal						
864.2			10					
859.2			15					
854.2			20					
849.2			25					
844.2			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 16+30.59; Offset 22.4' R
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 12

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326449.98 Easting: 13344995.68



Soil Boring No. B-13

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 865.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with little silt (6 inches)	0.5	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (6 inches)	1.0	BS-2		20.1		
		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 5.1%)	2.0	BS-3	8	21.1		2500*
		Stiff Brown and Gray Silty Clay with trace sand and gravel	3.0					
860.0		Medium Compact Brown Gravelly Sand with trace silt	5.0	BS-4	16			
		End of Boring @ 5 ft						
855.0			10					
850.0			15					
845.0			20					
840.0			25					
835.0			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 21+30.56; Offset 16.6' L
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 13

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-14

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326455.76 Easting: 13345568.01

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 853.1 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with little silt (6 inches)	0.5	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (12 inches)	1.5					
		Fill: Very Loose Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 2.1%)	3.0	BS-2	4	14.2		
848.1		Loose Brown Silty Sand with trace clay and gravel	5.0	BS-3	9			
		End of Boring @ 5 ft						
843.1			10					
838.1			15					
833.1			20					
828.1			25					
823.1			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 27+01.79; Offset 19.5' R

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 14

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326522.57 Easting: 13346018.11



Soil Boring No. B-15

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 845.7 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with trace silt (4 inches)	0.3	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (5 inches)	0.8					
		Fill: Loose Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 3.9%)	3.5	BS-2	5	20.4		
840.7		Loose Brown Gravelly Sand with trace silt	5.0	BS-3	9			
		End of Boring @ 5 ft						
835.7			10					
830.7			15					
825.7			20					
820.7			25					
815.7			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 31+55.56; Offset 14.2' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 15

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326541.26 Easting: 13346768.78



Soil Boring No. B-16

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 839.9 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with trace silt (8 inches)	0.7	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (7 inches)	1.3	BS-2		34.3		
		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 9.4%)	2.0	BS-3	5	18.6		2000*
		Stiff Gray Silty Clay with trace sand and gravel	4.0					
834.9		Medium Compact Gray Silty Sand with trace clay and gravel	5.0	BS-4	11			
		End of Boring @ 5 ft						
829.9			10					
824.9			15					
819.9			20					
814.9			25					
809.9			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 39+05.59; Offset 22.0' R
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326603.38 Easting: 13347115.14



Soil Boring No. B-17

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 837.8 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with trace silt (6 inches)	0.5	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (6 inches)	1.0					
		Crushed Slag Aggregate Base: Dark Brown Sandy Gravel (9 inches)	1.8	BS-2	3	39.3		
		Fill: Very Loose Dark Brown Silt with trace clay, sand, and organic matter (Organic Matter Content = 9.8%)	3.0					
832.8		Medium Compact Brown Silty Sand with trace gravel	5.0	BS-3	14			
		End of Boring @ 5 ft, Auger Refusal						
827.8			10					
822.8			15					
817.8			20					
812.8			25					
807.8			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 42+55.57; Offset 14.6' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 17

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326619.67 Easting: 13347790.78



Soil Boring No. B-18

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 837.6 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with trace silt (7 inches)	0.6	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (8 inches)	1.3	BS-2		12.8		
		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 2.8%)	2.0	BS-3	19			
		Fill: Medium Compact Brown Silty Sand with trace gravel	2.5	BS-4		27.6		
		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 5.8%)	3.0					
832.6		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 5.8%)	5.0	BS-5	6	23.0		2500*
		Stiff Brown and Gray Silty Clay with trace sand and gravel						
		End of Boring @ 5 ft						
827.6			10					
822.6			15					
817.6			20					
812.6			25					
807.6			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 49+30.59; Offset 18.7' R
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326674.9 Easting: 13348095.59



Soil Boring No. B-19

CONSULTING GROUP

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 838.6 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Bituminous Concrete (11 inches)	0.9						
		Aggregate Base: Dark Brown Sandy Gravel (13 inches)	2.0		6 9 4	13			
833.6		Fill: Loose to Medium Compact Black Clayey Sand with trace silt, gravel, and organic matter (Organic Matter Content = 7.8%)	5	S-2	2 2 4	6	31.9		
			7.0	S-3	3 2 2	4	19.3	114	1600
828.6		Medium Gray Silty Clay with trace sand and gravel and occasional sand partings and seams	10	S-4	0 1 2	3	19.9	108	1500*
			13.0						
823.6		Medium Compact Gray Silty Sand with trace gravel	15	S-5	6 8 13	21			
			18.0						
818.6		Medium Compact Gray Silt with trace sand and gravel and occasional clay seams and layers	20	S-6	3 5 11	16	13.5		
			23.0						
813.6		Very Stiff Gray Silty Clay with trace sand and gravel	25	S-7	7 8 10	18	17.0	118	4650
			28.0						
808.6		Hard Gray Sandy Clay with trace silt and gravel	30	S-8	50/5"	---	8.8		9000*

Total Depth: 40 ft
Drilling Date: October 29, 2015
Inspector: J. Hayball, P.E.
Contractor: Strata Drilling, Inc.
Driller: D. Watkins

Water Level Observation:
9-1/2 feet during drilling; 10 feet upon completion

Notes:
Station: 52+38.62; Offset 14.0' L
Borehole collapsed at 11 ft after auger removal
* Calibrated Hand Penetrometer

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 19a

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-19

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326674.9 Easting: 13348095.59

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 838.6 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
	PRO-FILE	Hard Gray Sandy Clay with trace silt and gravel <i>(continued)</i>	33.0						
803.6			35	S-9	26 46 48	94			
798.6		Very Compact Gray Clayey Sand with trace silt and gravel	40.0	40	S-10	50/3"	---		
		End of Boring @ 40 ft							
793.6			45						
788.6			50						
783.6			55						
778.6			60						

Total Depth: 40 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 9-1/2 feet during drilling; 10 feet upon completion

Notes:
 Station: 52+38.62; Offset 14.0' L
 Borehole collapsed at 11 ft after auger removal
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 19b

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326652.6 Easting: 13348188.34



Soil Boring No. B-20

CONSULTING GROUP

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 839.6 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Bituminous Concrete (12 inches)	1.0						
		Aggregate Base: Dark Brown Sandy Gravel (12 inches)	2.0						
834.6		Loose to Medium Compact Brown Sand with trace silt and gravel	5	S-1	8 8 7	15			
			7.0	S-2	6 5 4	9			
		Very Loose Black Peat (Organic Matter Content = 21.9%)	9.5	S-3	2 1 1	2	88.5		
829.6		Loose Dark Gray Sand with trace silt and shells	10	S-4	2 3 5	8			
			13.0						
824.6		Medium Compact Gray Silty Sand with trace clay and gravel	15	S-5	6 9 10	19			
			18.0						
819.6		Medium Compact Gray Silt with trace clay and gravel and occasional sand seams and layers	20	S-6	5 13 11	24	20.9		
			23.0						
814.6		Medium Compact Gray Sandy Gravel with occasional clay seams	25	S-7	7 9 7	16			
			28.0						
809.6		Hard Gray Silty Clay with trace sand and gravel and occasional sand seams and layers	30	S-8	14 28 31	59	7.3		9000*

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 45 ft
Drilling Date: October 29, 2015
Inspector: J. Hayball, P.E.
Contractor: Strata Drilling, Inc.
Driller: D. Watkins

Water Level Observation:
6-1/2 feet during drilling; 11 feet upon completion

Notes:
Station: 53+29.49; Offset 15.1' R
Borehole collapsed at 12-1/2 ft after auger removal
* Calibrated Hand Penetrometer

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-20

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326652.6 Easting: 13348188.34

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 839.6 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
804.6		Hard Gray Silty Clay with trace sand and gravel and occasional sand seams and layers (continued)	35	S-9	38 47 56	103	8.6		9000*
799.6			40	S-10	11 37 48	85	12.3		9000*
794.6			45	S-11	30 47 50/2"	---	10.4		9000*
		End of Boring @ 45 ft	45.0						
789.6			50						
784.6			55						
779.6			60						

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 45 ft
Drilling Date: October 29, 2015
Inspector: J. Hayball, P.E.
Contractor: Strata Drilling, Inc.
Driller: D. Watkins

Water Level Observation:
6-1/2 feet during drilling; 11 feet upon completion

Notes:
Station: 53+29.49; Offset 15.1' R
Borehole collapsed at 12-1/2 ft after auger removal
* Calibrated Hand Penetrometer

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-21

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326743.99 Easting: 13348959.79

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 839.9 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with trace silt (8 inches)	0.7	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (10 inches)	1.5	BS-2	7			
834.9		Loose Brown Sand with trace silt and gravel	5.0	BS-3	10			
		End of Boring @ 5 ft						
829.9			10					
824.9			15					
819.9			20					
814.9			25					
809.9			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 61+05.57; Offset 19.5' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 21

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth
 Township, Michigan
 G2 Project No. 143288
 Northing: 326715.64 Easting: 13349337.23



Soil Boring No. B-22

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 840.1 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Silty Sand (14 inches)	1.2		4				
		Fill: Loose Brown Silty Sand with trace gravel and occasional clay seams	3.0	S-1	4 5	9			
835.1		Medium Brown Sandy Clay with trace silt and gravel	5	S-2	2 3 3	6	21.6	109	1190
		Medium Compact Gray Clayey Sand with trace gravel and occasional sand seams	6.0		5				
			8.0	S-3	6 7	13			
830.1		Loose Brown Silty Sand with trace silt and gravel	10	S-4	3 4 5	9			
			13.5	S-5	3 4 4	8			
825.1		Very Compact Cobbles and Boulders	15.0	S-6	50/1"	---			
		End of Boring @ 15.5 ft, Auger Refusal							
820.1			20						
815.1			25						
810.1			30						

Total Depth: 15.5 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 6 feet during drilling; 5 feet upon completion

Notes:
 Station: 64+79.91; Offset 36.5' R
 Driller attempted 3 locations with refusal at 15 feet each time

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 22

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth
 Township, Michigan
 G2 Project No. 143288
 Northing: 326804.09 Easting: 13349520.21



Soil Boring No. **B-23**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 840.8 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Clayey Sand (14 inches)	1.2						
		Fill: Loose Dark Brown Clayey Sand with trace silt and gravel	3.0	S-1	4 3 3	6			
835.8		Very Stiff to Hard Brown and Gray Silty Clay with trace sand and gravel and occasional silty sand layers	5	S-2	7 10 13	23	14.9		9000*
		Hard Gray Silty Clay with trace sand and gravel	8.0	S-3	4 4 9	13	20.2		4000*
830.8		Very Compact Gray Sandy Gravel with trace silt	10.5	S-4	7 9 10	19	17.1		8000*
		Medium Compact Gray Sand with trace silt and gravel	13.0	S-5	50/5"	---			
825.8		Medium Compact Gray Silty Sand with trace gravel	15	S-6	10 12 15	27			
		Medium Compact Gray Silty Sand with trace gravel	18.0	S-7	4 6 9	15			
820.8		Medium Compact Gray Silty Sand with trace gravel	20	S-8	4 6 13	19			
		Medium Compact Gray Silty Sand with trace gravel	25.0	S-9	8 11 13	24			
815.8		End of Boring @ 25 ft	25	S-10	6 12 14	26			
810.8			30						

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 25 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 5-1/2 feet during drilling; 5 feet upon completion

Notes:
 Station: 66+67.98; Offset 41.1' L
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

Figure No. 23

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326964.93 Easting: 13354581.15



Soil Boring No. B-24

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 877.7 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Silty Clay (8 inches)	0.7						
		Fill: Hard Dark Brown Silty Clay with trace sand and gravel	3.0	S-1	4 5 6	11	11.6		9000*
872.7		Fill: Very Stiff Dark Gray Silty Clay with trace sand and gravel	5.0	S-2	4 4 5	9	14.9		6000*
		Medium Compact Brown Clayey Sand with trace gravel	6.0	S-3	4 5 7	12			
867.7		Medium Gray Clayey Silt with trace sand	8.0	S-4	3 3 4	7	11.6	133	1030
		Stiff to Very Stiff Gray Silty Clay with trace sand and gravel and occasional sand seams	11.0	S-5	4 6 9	15	16.4		3000*
862.7			15.0	S-6	4 6 6	12	13.5	144	7960
			20.0	S-7	4 6 6	12	12.7	124	4500*
857.7			21.0	S-8	5 6 7	13	11.2	136	4580
		Very Stiff to Hard Gray Silty Clay with trace sand and gravel	25.0	S-9	6 7 8	15	9.8		8000*
852.7			25.0	S-10	4 6 6	12	10.1		5000*
		End of Boring @ 25 ft							
847.7			30.0						

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 25 ft
Drilling Date: October 30, 2015
Inspector: J. Hayball, P.E.
Contractor: Strata Drilling, Inc.
Driller: D. Watkins

Water Level Observation:
8 feet during drilling; 19 feet upon completion

Notes:
Station: 117+30.90; Offset 36.1' R
Borehole collapsed at 20-1/2 ft after auger removal
* Calibrated Hand Penetrometer

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings

Figure No. 24

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 327069.99 Easting: 13354762.18



Soil Boring No. B-25

CONSULTING GROUP

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 879.1 ft	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Sandy Clay (8 inches)	0.7		4				
		Fill: Stiff to Very Stiff Brown Sandy Clay with trace silt and gravel		S-1	7	15	12.8		5000*
874.1			5	S-2	3	5	14.7		2000*
		Medium Compact Brown Gravelly Sand with trace silt	5.5	S-3	6	11			
869.1		Medium Compact Sandy Gravel with trace silt	9.0	S-4	7	13			
		Medium to Stiff Gray Silty Clay with trace sand and gravel and occasional sand seams	11.5	S-5	5	9	11.5	133	1640
864.1			15	S-6	7	12	11.4	132	2380
		Stiff to Very Stiff Gray Silty Clay with trace sand and gravel and occasional sand seams	16.0	S-7	4	8	13.3	120	4010
859.1			20	S-8	4	8	13.6	125	2430
		Medium to Stiff Gray Sandy Clay with trace silt and gravel and occasional sand seams	21.0	S-9	4	8	12.6	128	1500*
854.1			25	S-10	6	10	11.6	133	2500*
		End of Boring @ 25 ft							
849.1			30						

BORING LOG WITH NORTHING / EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Total Depth: 25 ft
 Drilling Date: October 30, 2015
 Inspector: J. Hayball, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 9 feet during drilling; 8 feet upon completion

Notes:
 Station: 119+19.92; Offset 56.0' L
 Borehole collapsed at 15 ft after auger removal
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

Figure No. 25

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-26

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326807.74 Easting: 13350061.91

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 838.3 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with little silt (9 inches)	0.8	BS-1				
		Road Gravel Fill: Dark Brown Gravelly Sand (9 inches)	1.5	BS-2		15.9		
		Fill: Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 3.7%)	2.0	BS-3	29			
833.3		Medium Compact Brown Gravelly Sand with trace silt	5.0	BS-4	27			
		End of Boring @ 5 ft						
828.3			10					
823.3			15					
818.3			20					
813.3			25					
808.3			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 72+09.17; Offset 17.3' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 26

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-27

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326790.43 Easting: 13350413.2

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 847.5 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Gray Sand and Gravel with little silt (6 inches)	0.5	BS-1				
		Road Gravel Fill: Brown Gravelly Sand with trace silt (6 inches)	1.0					
		Road Gravel Fill: Dark Brown Gravelly Sand with trace silt	2.0	BS-2	20			
		Medium Compact Brown Gravelly Sand with trace silt						
842.5			5.0	BS-3	17			
		End of Boring @ 5 ft						
837.5			10					
832.5			15					
827.5			20					
822.5			25					
817.5			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 75+59.14; Offset 17.7' R

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 27

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-28

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326868.34 Easting: 13351144.7

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 861.3 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Brown Sandy Gravel with little silt (9 inches)	0.8	BS-1				
		Road Gravel Fill: Brown Gravelly Sand (9 inches)	1.5	BS-2	11			
856.3		Medium Compact Brown Sand with trace silt and gravel	5.0	BS-3	13			
		End of Boring @ 5 ft						
851.3			10					
846.3			15					
841.3			20					
836.3			25					
831.3			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 82+93.64; Offset 23.1' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Figure No. 28

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

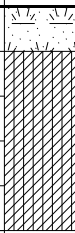
G2 Project No. 143288

Northing: 326832.59 Easting: 13351515.6



Soil Boring No. B-29

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 867.3 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Topsoil: Dark Brown Silty Clay (12 inches)	1.0					
		Hard Brown and Gray Silty Clay with trace sand and gravel		BS-1	18	16.4		9000*
862.3			5.0	5	BS-2	15	16.1	9000*
		End of Boring @ 5 ft						
857.3			10					
852.3			15					
847.3			20					
842.3			25					
837.3			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 86+62.26; Offset 31.3' R
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-30


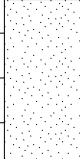
Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326926.8 Easting: 13352327.78

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 856.1 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Brown Sandy Gravel with little silt (15 inches)	1.3	BS-1				
		Medium Compact Brown Sand with trace silt and gravel and occasional clay seams		BS-2	12			
851.1			5.0	BS-3	13			
		End of Boring @ 5 ft						
846.1			10					
841.1			15					
836.1			20					
831.1			25					
826.1			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 94+78.00; Offset 23.7' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan


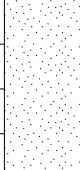
G2 Project No. 143288

Northing: 326898.56 Easting: 13352610.54



Soil Boring No. B-31

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 869.1 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Dark Brown Sandy Gravel with little silt (9 inches)	0.8	BS-1				
		Medium Compact Brown Sand with trace silt and gravel		BS-2	19			
864.1			5.0	BS-3	14			
		End of Boring @ 5 ft						
859.1			10					
854.1			15					
849.1			20					
844.1			25					
839.1			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 97+59.27; Offset 16.8' R

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan

G2 Project No. 143288

Northing: 326977.89 Easting: 13353357.53



Soil Boring No. B-32

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 882.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Topsoil: Dark Brown Silty Sand (4 inches)	0.3					
		Fill: Compact Dark Gray Sandy Gravel with trace silt and concrete debris	3.0	BS-1	37			
877.0		Hard Brown and Gray Silty Clay with trace sand and gravel	5.0	BS-2	17	15.7		9000*
		End of Boring @ 5 ft						
872.0			10					
867.0			15					
862.0			20					
857.0			25					
852.0			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 105+09.00; Offset 30.0' L
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-33

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 326933.12 Easting: 13353710.18

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 880.2 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Topsoil: Dark Brown Clayey Sand (5 inches)	0.4					
		Fill: Medium Compact Brown Clayey Sand with trace silt and gravel	2.5	BS-1	14			
875.2		Hard Brown and Gray Silty Clay with trace sand and gravel	5.0	BS-2	19	18.0		9000*
		End of Boring @ 5 ft						
870.2			10					
865.2			15					
860.2			20					
855.2			25					
850.2			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 108+59.37; Offset 30.1' R
 * Calibrated Hand Penetrometer

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-34

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 327016.66 Easting: 13354357.9

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 877.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Topsoil: Dark Brown Silty Clay (2 inches)	0.2					
		Fill: Brown Silty Clay with trace sand and gravel	1.3					
		Fill: Compact Gray Sandy Gravel with trace silt and concrete debris	3.0	BS-1	41			
872.0		Medium Compact Brown Gravelly Sand with trace silt	5.0	BS-2	28			
		End of Boring @ 5 ft						
867.0			10					
862.0			15					
857.0			20					
852.0			25					
847.0			30					

Total Depth: 5 ft
 Drilling Date: October 31, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 101+10.11; Offset 25.3' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-35

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 327172.55 Easting: 13349408.85

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 839.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Brown Sandy Gravel (6 inches)	0.5					
		Fill: Loose Dark Brown Clayey Sand with trace silt and gravel	3.0	BS-1	9			
834.0		Medium Compact Brown Sand with trace silt and gravel	5.0	BS-2	16			
		End of Boring @ 5 ft						
829.0			10					
824.0			15					
819.0			20					
814.0			25					
809.0			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 65+75.38; Offset 414.7' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAVEMENT CORE DCP NORTHING EASTING 143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16

Project Name: 5 Mile Corridor Design Project

Soil Boring No. B-36

Project Location: Beck Road to Napier Road
Northville Township and Plymouth
Township, Michigan



CONSULTING GROUP

G2 Project No. 143288

Northing: 327470.32 Easting: 13349350.09

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 83576.0 ft	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Road Gravel Fill: Brown Sandy Gravel (12 inches)	1.0					
		Fill: Medium Compact Dark Brown Clayey Sand with trace silt, gravel, and organic matter (Organic Matter Content = 3.4%)	3.0	BS-1	13			
83571.0		Medium Compact Brown Gravelly Sand with trace silt	5.0	5	BS-2	27		
		End of Boring @ 5 ft						
83566.0			10					
83561.0			15					
83556.0			20					
83551.0			25					
83546.0			30					

Total Depth: 5 ft
 Drilling Date: October 29, 2015
 Inspector: J. Hayball, P.E.
 Contractor: G2 Consulting Group, LLC
 Driller: J. Hayball, P.E.

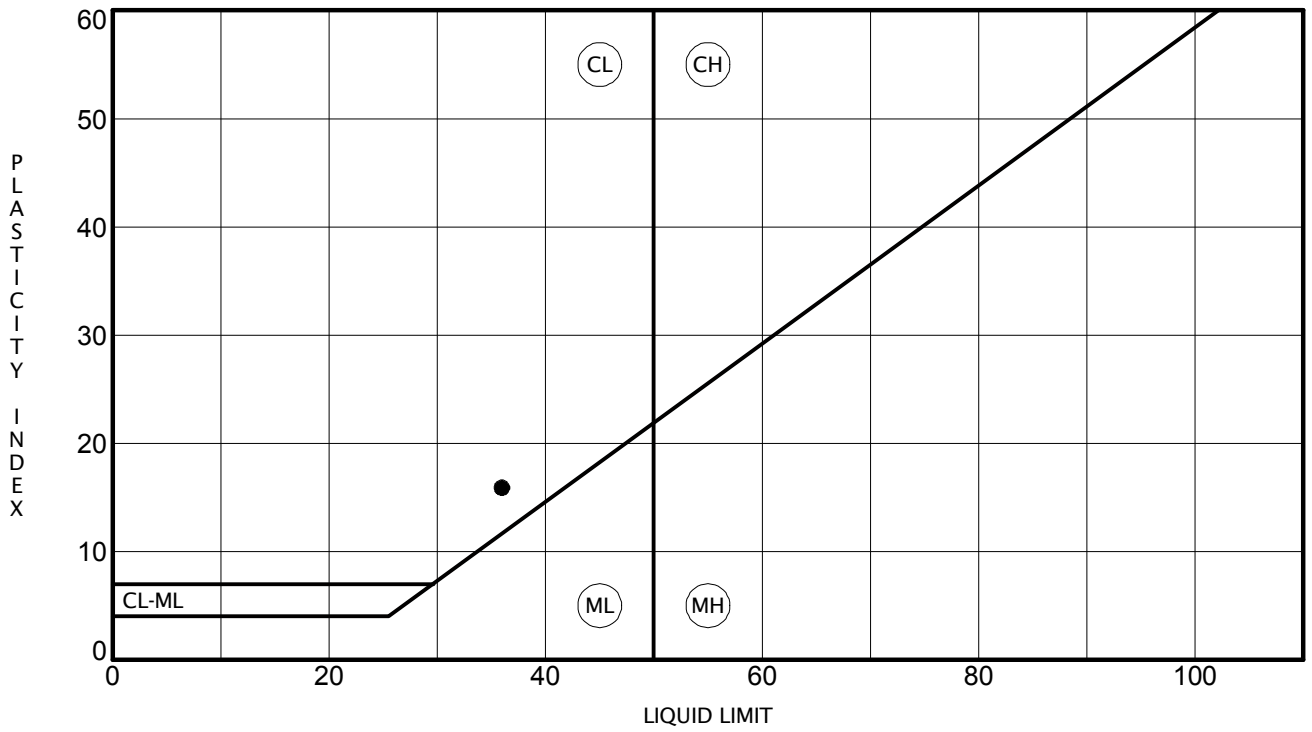
Water Level Observation:
 Dry during and upon completion of drilling

Notes:
 Station: 65+48.10; Offset 715.2' L

Drilling Method:
 3-inch diameter hand auger

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings

PAYEMENT CORE DCP NORTHING EASTING_143288.GPJ_20140820 G2 CONSULTING DATA TEMPLATE.GDT 1/4/16



Specimen Identification	LL	PL	PI	Fines	M %	Classification	
● C-7	BS-1	36	20	16		16	Brown Silty Clay

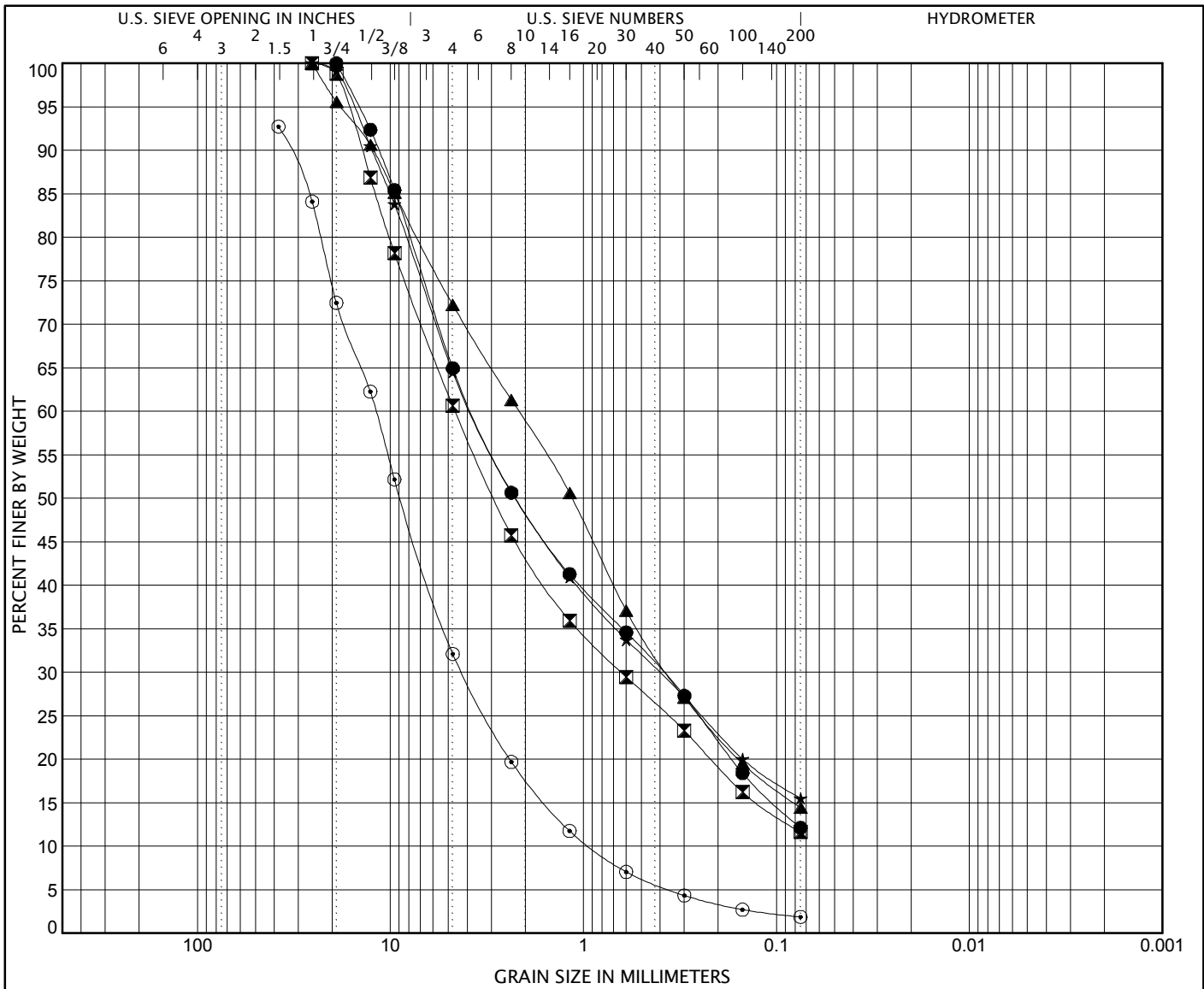
US_ATTERBERG_LIMITS_143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/18/15



ATTERBERG LIMITS RESULTS

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth Township,
 Michigan
 G2 Project No.: 143288

Figure No. 37



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Description	LL	PL	PI	Cc	Cu
● B-12 BS-1	Dark Gray Sand and Gravel with trace little				0.68	62.67
■ B-18 BS-1	Dark Gray Sand and Gravel with trace silt				1.49	78.51
▲ B-26 BS-1	Dark Gray Sandy Gravel with little silt					
★ B-28 BS-1	Dark Brown Sand and Gravel with little silt					
⊙ C-1 BS-1	Dark Brown Sandy Gravel with trace silt				1.63	12.95

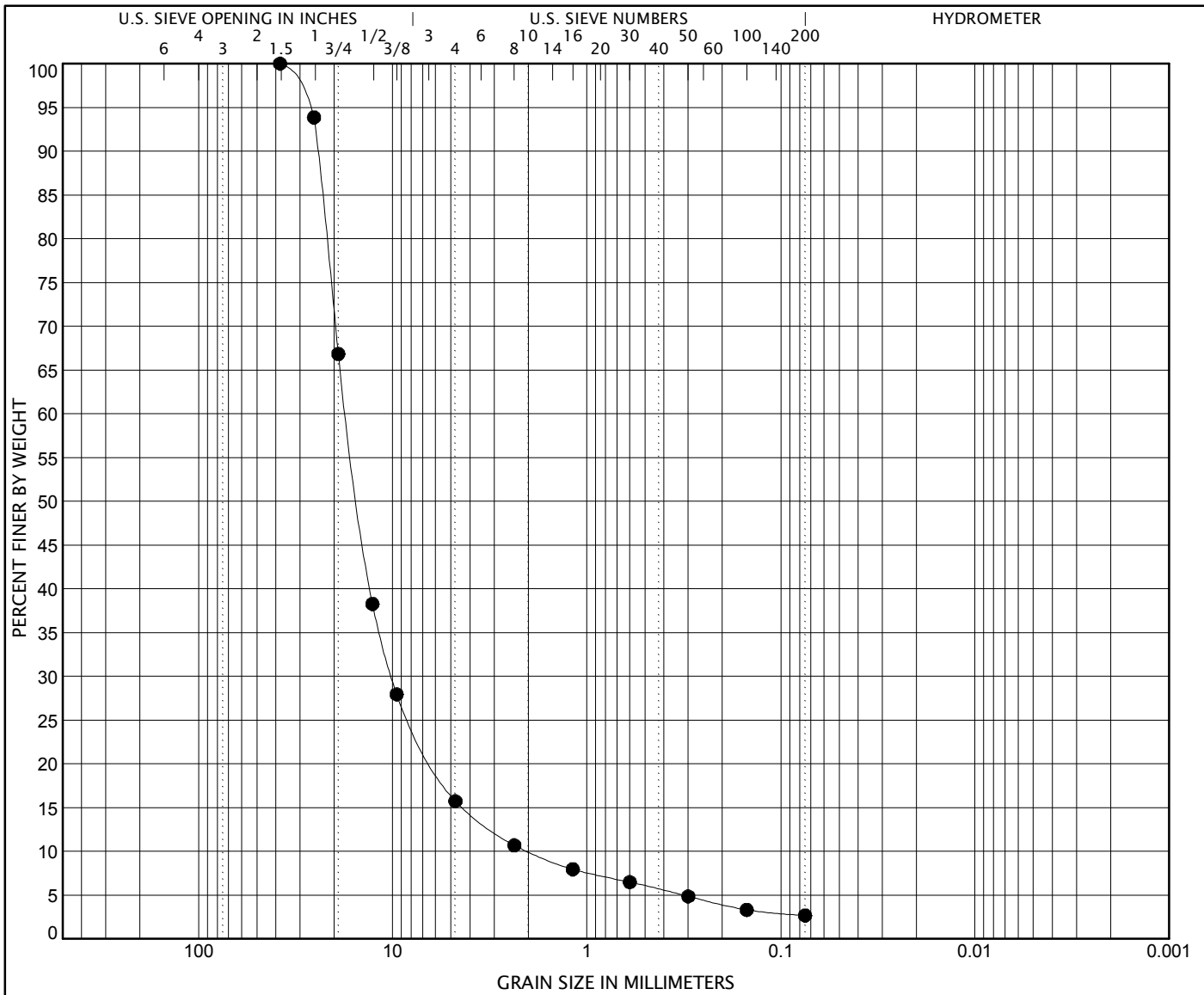
Specimen ID	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-12 BS-1	19.05	3.732	0.389		35.1	52.8	12.1	
■ B-18 BS-1	25.4	4.615	0.636		39.4	49.0	11.6	
▲ B-26 BS-1	25.4	2.171	0.368		27.8	57.8	14.4	
★ B-28 BS-1	25.4	3.781	0.405		35.5	49.0	15.5	
⊙ C-1 BS-1	38	11.914	4.224	0.92	60.6	30.2	1.8	

GRAIN SIZE DISTRIBUTION

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth Township,
 Michigan
 G2 Project No.: 143288
 Figure No. 38



US_GRAIN_SIZE_143288.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/18/15



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Description	LL	PL	PI	Cc	Cu
● C-9 BS-1	Gray Sandy Gravel with trace silt				2.96	8.69

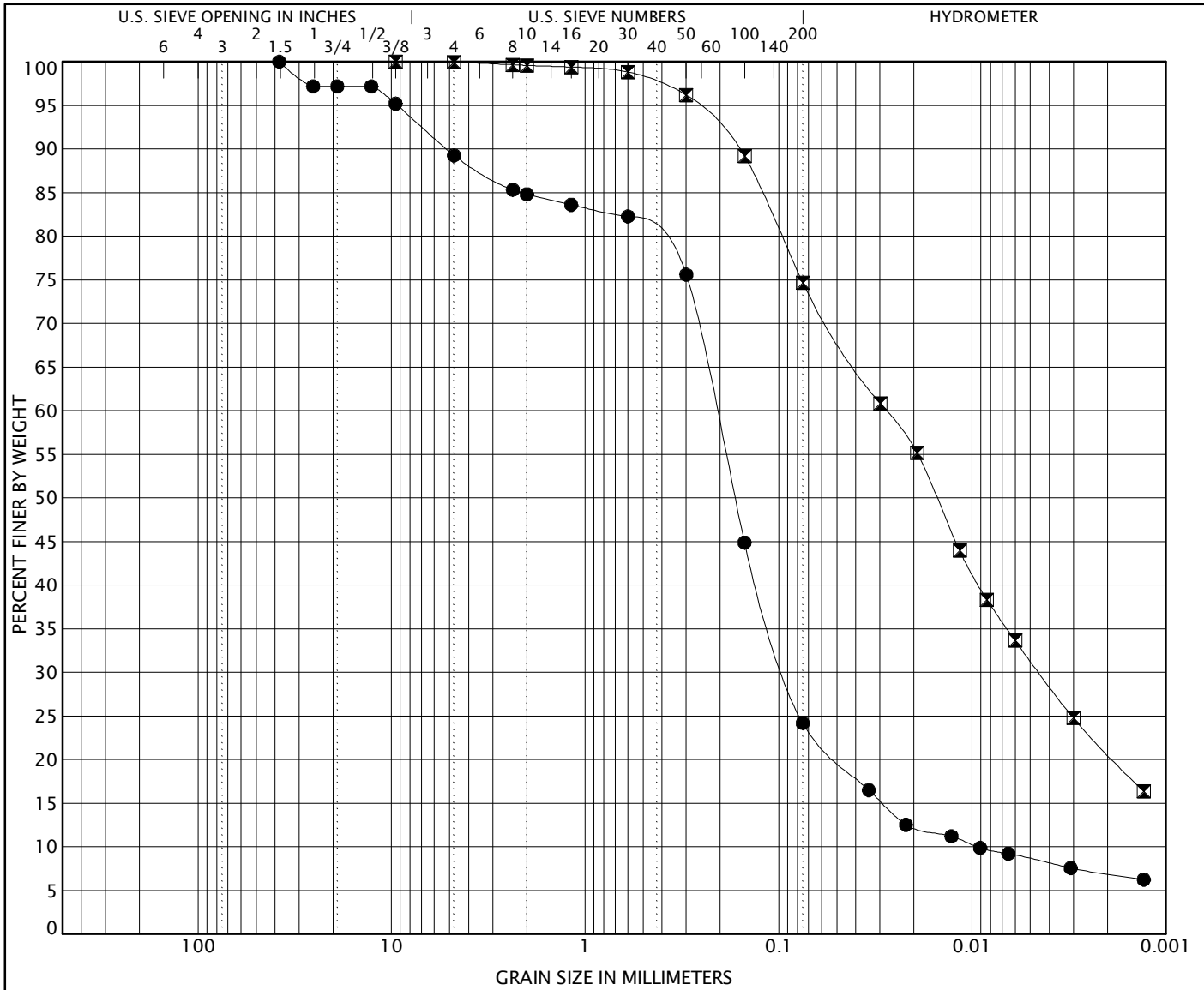
Specimen ID	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● C-9 BS-1	38	17.291	10.091	1.989	84.3	13.1	2.7	

GRAIN SIZE DISTRIBUTION

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth Township,
 Michigan
 G2 Project No.: 143288 Figure No. 39



US_GRAIN_SIZE_143288.GPJ 20140820.G2 CONSULTING DATA TEMPLATE.GDT 12/18/15



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Description	LL	PL	PI	Cc	Cu
● SC-37 BS-1	Black Silty Sand with trace clay and gravel				4.18	22.39
☒ SC-38 BS-1	Gray Clayey Silt with some sand					

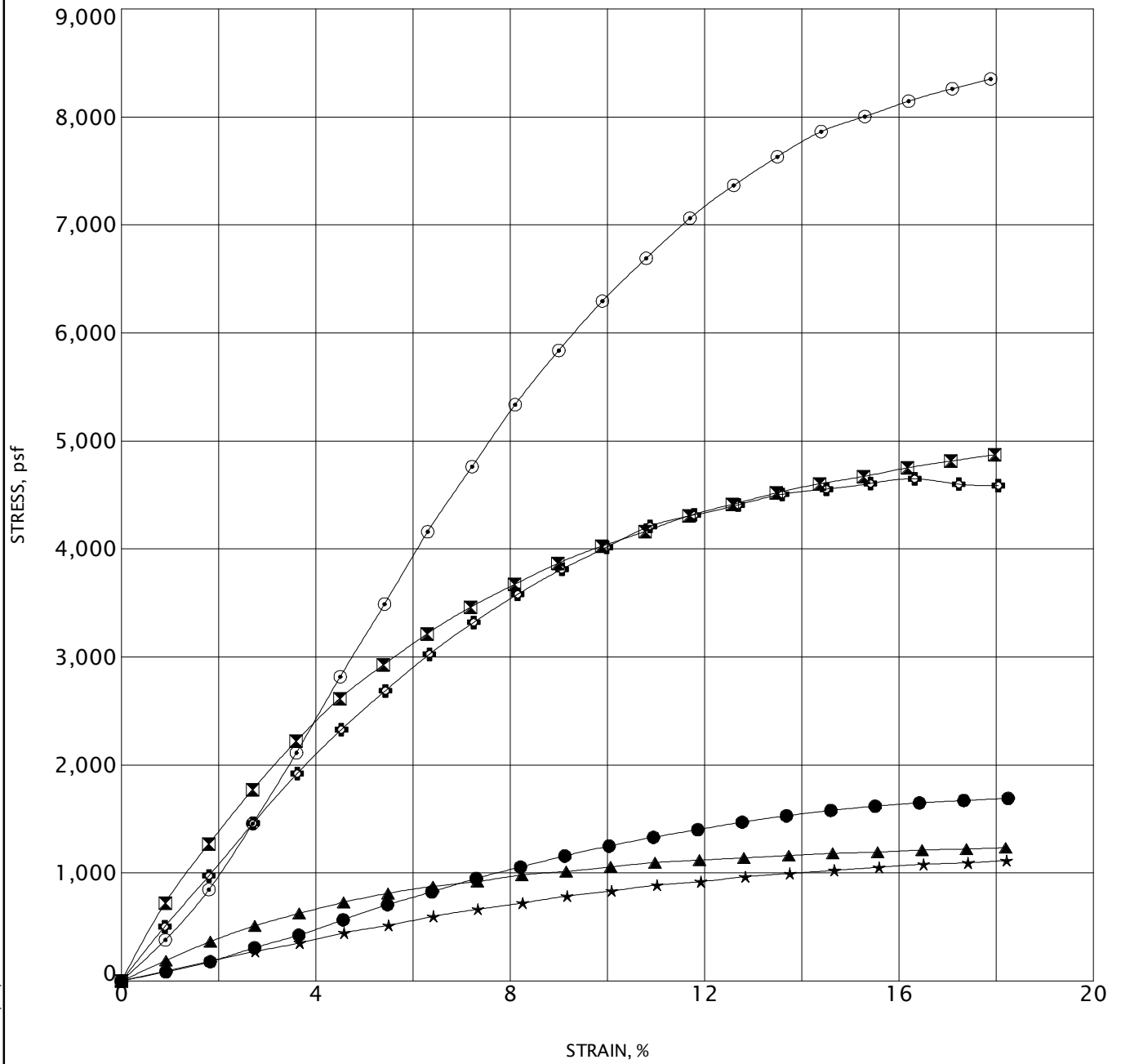
Specimen ID	D100	D84	D50	D10	%Gravel	%Sand	%Silt	%Clay
● SC-37 BS-1	38	1.404	0.168	0.009	10.7	65.1	15.6	8.6
☒ SC-38 BS-1	9.525	0.117	0.015		0.1	25.3	43.4	31.3

GRAIN SIZE DISTRIBUTION

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth Township,
 Michigan
 G2 Project No.: 143288 Figure No. 40



US_GRAIN_SIZE_SCOUR_143288.CPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/18/15



Specimen	Classification	MC%	γ_d	UC
● B-19 S-3	Gray Silty Clay	19	114	1600
⊠ B-19 S-7	Gray Silty Clay	17	118	4650
▲ B-22 S-2	Brown Sandy Clay	22	109	1190
★ B-24 S-4	Gray Clayey Silt	11	133	1030
⊙ B-24 S-6	Gray Silty Clay	14	144	7960
⊞ B-24 S-8	Gray Silty Clay	11	136	4580

UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Design Project

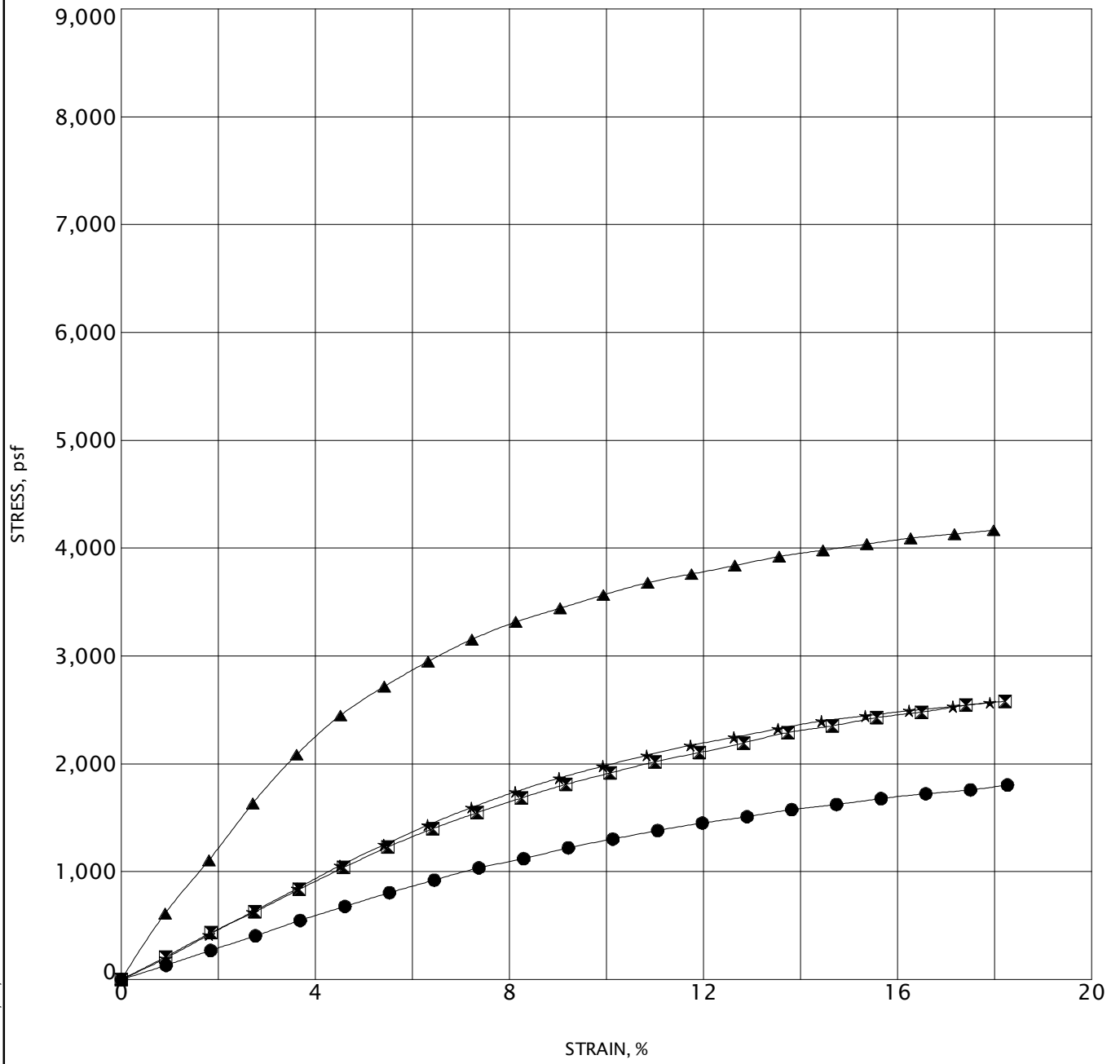
Project Location: Beck Road to Napier Road
Northville Township and Plymouth Township,
Michigan

G2 Project No.: 143288

Figure No. 41



US_UNCONFINED_143288.CPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 12/18/15



Specimen	Classification	MC%	γ_d	UC
● B-25 S-5	Gray Silty Clay	11	133	1640
◻ B-25 S-6	Gray Silty Clay	11	132	2380
▲ B-25 S-7	Gray Silty Clay	13	120	4010
★ B-25 S-8	Gray Silty Clay	14	125	2430

UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Design Project
 Project Location: Beck Road to Napier Road
 Northville Township and Plymouth Township,
 Michigan
 G2 Project No.: 143288

Figure No. 42



Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288



Core Photograph No. 1: 10-1/2 inches of Bituminous Concrete



Core Photograph No. 2: 12 inches of Bituminous Concrete

Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288



Core Photograph No. 3: 12 inches of Bituminous Concrete



Core Photograph No. 4: 11 inches of Bituminous Concrete

Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288



Core Photograph No. 5: 15 inches of Bituminous Concrete



Core Photograph No. 6: 10-1/2 inches of Bituminous Concrete
8-1/2 inches of Portland Cement Concrete

Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288



Core Photograph No. 7: 10 inches of Bituminous Concrete
6 inches of Portland Cement Concrete



Core Photograph No. 8: 12 inches of Bituminous Concrete
8 inches of Portland Cement Concrete

Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288



Core Photograph No. 9: 1-3/4 inches of Bituminous Concrete
9-1/4 inches of Portland Cement Concrete



Core Photograph No. 10: 13 inches of Bituminous Concrete
7 inches of Portland Cement Concrete

**Photographic Documentation
5 Mile Corridor Design Project
Northville and Plymouth Township, Michigan
G2 Project No. 143288**



Core Photograph No. 11: 3 inches of Bituminous Concrete
9 inches of Portland Cement Concrete (Fractured)

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).



Report on Geotechnical Investigation

**5 Mile Corridor Project
Ridge Road:
5 Mile Road to
Halyard Road
Plymouth/Northville,
Michigan**

Latitude 42.383493 ° N
Longitude 83.529356 ° W

Prepared for:

OHM Advisors
34000 Plymouth Road
Livonia, Michigan 48150

G2 Project No. 143288
September 26, 2022



CONSULTING
GROUP

September 26, 2022

Mr. Mark Loch, P.E.
Senior Project Manager
OHM Advisors
34000 Plymouth Road
Livonia, Michigan 48150

Re: Report on Geotechnical Investigation
5 Mile Corridor Project
Ridge Road: 5 Mile Road to Halyard Road
Plymouth Township and Northville Township, Wayne County, Michigan
G2 Project Number 143288
OHM Job No. 0657-21-0100

Dear Mr. Loch:

We have completed the geotechnical investigation for the proposed site improvements along Ridge Road between 5 Mile Road and Halyard Road as part of the 5 Mile Corridor Project in the Townships of Plymouth and Northville, Michigan. This report presents the results of our observations and analyses and our recommendations for pavement section design, strain pole traffic signal foundation design, new storm sewer construction, and construction as they relate to the geotechnical conditions along the route.

We appreciate the opportunity to be of service to OHM Advisors 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 contact us.

Sincerely,

G2 Consulting Group, LLC

Jeffrey M. Hayball, P.E.
Project Engineer

Noel J. Hargrave-Thomas, P.E.
Principal

Jason B. Stoops, P.E.
Project Manager / Associate

JMH/NJHT/JBS/ljv

Enclosures

g2consultinggroup.com

Headquarters	1866 Woodslee St	Troy, MI 48083	P 248.680.0400	F 248.680.9745
Ann Arbor	1350 Eisenhower Pl	Ann Arbor, MI 48108	P 734.390.9330	F 734.390.9331
Chicagoland	1186 Heather Dr	Lake Zurich, IL 60047	P 847.353.8740	F 847.353.8742



EXECUTIVE SUMMARY

The project includes paving and underground improvements along Ridge Road from Halyard Road to 5 Mile Road within the Townships of Plymouth and Northville, Wayne County, Michigan. Underground improvements include construction of new storm sewer in open-cut excavations at invert depths ranging from 5 to 6 feet below final grades. The existing pavements are proposed to be reconstructed with a new Portland cement concrete (PCC) pavement section. A new Hot Mix Asphalt (HMA) pavement section is proposed within 12 feet of the roadway crossing. A new traffic signal strain pole will be constructed at the northwest and southeast corners of the intersection of 5 Mile Road and Ridge Road.

The existing HMA ranges in thickness from 5-1/2 to 6-3/4 inches at borings B-01 through B-13. A crushed limestone aggregate base is present beneath the HMA pavement and measures 3 to 18-1/4 inches thick at the borings B-01 through B-13. Approximately 12 inches of crushed limestone aggregate is present at the ground surface of boring B-14. Approximately 14 to 18 inches of topsoil are present at the ground surface of borings B-15 and B-16. Stiff to hard sandy clay fill and medium compact to compact granular fill soils underlies the pavement section within borings B-01 and B-04 through B-13 and extend to depths ranging from 1-1/2 to 5-1/2 feet. In general, native stiff to very hard silty clay underlies the topsoil, pavement section, and fill soils within the borings and extends to the explored depth of 5 feet and 10 feet within borings B-01 through B-08, B-13, and B-14, and 12-1/2 to 15 feet within borings B-15 and B-16. Medium compact to compact granular soils are generally present below the native silty clay within borings B-09 through B-12, B-15 and B-16, extending to the explored depth of 5 feet, 10 feet, and 25 feet. Groundwater was observed at depths ranging from 4 to 12-1/2 feet during drilling operations within soil boring B-13 through B-16. A wet collapse of the borehole was measured at depths ranging from 4-1/2 and 14-1/2 feet upon removal of the drilling augers within boring B-14 through B-16. No measurable groundwater was observed within boring B-13 upon completion of drilling operations. No measurable groundwater was observed within the remaining soil borings during or upon completion of drilling operations.

Based on the results of our analysis, we confirm the proposed PCC pavement section is suitable for proposed reconstruction and will support 6.5 million Equivalent Single Axle Loads (ESALs) over a 20-year design life. However, the proposed HMA per Wayne County Road Commission is not comparable to the proposed PCC section. Therefore, we recommend the railroad crossing pavement section consist of 1-1/2 inches of MDOT 5EMH HMA pavement wearing course, 1-1/2 inches of MDOT 4EMH HMA pavement leveling course, 6 inches of MDOT 3EMH HMA base course (placed in two equal lifts), supported on a minimum of 12 inches of MDOT 21AA aggregate base.

We recommend the proposed traffic signal strain poles be supported by foundations in accordance with the following table per MDOT standards:

Soil Boring	30 Foot Pole Length				36 Foot Pole Length		40 Foot Pole Length	
	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)
B-15	36	13	42	12-1/2	42	13	42	13-1/2
B-16	36	13	42	12-1/2	42	13	42	13-1/2

Note: Due to the presence of groundwater above the foundation bottom, temporary casing will be required within the drill pier excavation at the soil boring B-15 and B-16 locations.

The above recommendations are based on the MDOT Traffic Signal Strain Pole Foundation Design Table S1G-DESIGN-153-A using the encountered soil conditions, pole height assumptions, and span length assumption.

Do not consider this summary 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

The project includes paving and underground improvements along Ridge Road from Halyard Road to 5 Mile Road within the Townships of Plymouth and Northville, Wayne County, Michigan. Ridge Road generally consists Hot Mix Asphalt (HMA) with two lanes (north bound and south bound) and gravel/paved shoulders. An existing railroad crosses Ridge Road approximately 500 feet south of 5 Mile Road. A portion of Ridge Road, from 5 Mile Road to approximately 700 feet north, is included with this project, which consists of an aggregate surface roadway.

Underground improvements include construction of new storm sewer. No information regarding the size or invert depth of the new storm sewer was available upon completion of this report. However, we assume new storm sewer invert depths will range between 5 to 6 feet below final grades and installed using open-cut installation methods. The existing pavements are proposed to be reconstructed in conjunction with the underground improvements and consist of new Portland cement concrete (PCC) pavement section. The proposed pavement section consists of 10 inches of PCC pavement, supported on a minimum of 12 inches of aggregate base according to the Wayne County Road Commission. A new HMA pavement section is proposed within 12 feet of the railroad crossing, which consists of 5 inches of HMA pavement, supported on a minimum of 12 inches of aggregate base per the Wayne County Road Commission. No information regarding traffic counts or types was available upon completion of this report.

A new traffic signal strain pole will be constructed at the northwest and southeast corners of the intersection of 5 Mile Road and Ridge Road. The length of the strain poles was not available upon completion of this report. Based on review of the approximate traffic signal pole locations, the span between poles is approximately 145 feet.

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, MDOT Requirements for Preliminary Geotechnical Investigations for Signal Foundations, and Traffic Signal Strain Pole Foundation Design Table SIG-DESIGN-153-A. Our scope of services for this project is as follows:

1. We performed full depth pavement cores at thirteen (13) locations in alternating lanes of Ridge Road between Halyard Road and 5 Mile Road.
2. We performed soil borings at sixteen (16) locations for the proposed project. Soil borings B-01, B-05, B-06, B-09, B-10, and B-13, were performed at the pavement core locations, extending to a depth of 10 feet below existing grades. Soil borings B-02 through B-04, B-07, B-08, B-11, and B-12 were drilled at the pavement core locations, extending to a depth of 5 feet each. Soil boring B-14 was drilled through the existing aggregate surface road along Ridge Road, north of 5 Mile Road, and extended to a depth of 10 feet. Soil borings B-15 and B-16 were drilled in the generally location of the proposed traffic strain poles and extended to a depth of 25 feet below grade.
3. We measured and photographed pavement core samples from the route and performed laboratory testing on representative samples obtained from the soil borings. Laboratory testing included visual engineering classification, moisture content, organic matter content (loss-on-ignition), dry density, and unconfined compressive strength determinations.
4. We prepared this engineering report. The report includes recommendations for design pavement sections, paving materials, soil design parameters, foundation depths, and construction considerations for underground construction, pavement construction, and foundation construction.



FIELD OPERATIONS

G2 Consulting Group, LLC (G2) selected the core sample and soil boring locations and depths in consultation with OHM Advisors (OHM). The soil boring locations were determined in the field and marked by a representative of G2 prior to drilling operations. The approximate soil boring locations are shown on the Soil Boring Location Plan, Plate No. 1. Ground surface elevations were not available upon completion of this report. However, we recommend the boring locations be surveyed in the field so an elevation can be assigned to each soil boring.

We used a gas powered core rig equipped with a 6-inch diameter diamond-tipped core barrel to core the pavement at the pavement core and soil boring locations. Pavement cores were drilled through the full depth of the existing pavement structure to obtain an accurate determination of the pavement thickness. Core samples were delivered to our laboratory for length measurements and photographs.

Soil borings B-01 through B-16 were drilled using a truck-mounted rotary drilling rig. Continuous flight, 2-1/4-inch inside diameter, hollow-stem augers were used to advance the boreholes. The soil samples were obtained at intervals of 2-1/2 feet by the Standard Penetration Test (SPT) method ASTM D1586, which involves driving a 2-inch diameter split-spoon sampler into the soil with a 140-pound weight falling 30 inches. The sampler is generally driven three successive 6-inch increments with the number of blows for each increment recorded. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N). The blow counts for each 6-inch increment and the resulting N-value are presented on the soil boring logs.

The soil samples were placed in sealed containers in the field and brought to the laboratory for testing and classification. During the drilling operations, the G2 professional engineer maintained logs of the encountered subsurface conditions, including changes in stratigraphy and observed groundwater levels of the soil borings to be used in conjunction with our analyses of the subsurface conditions. The final boring logs are based on the field logs and laboratory soil classification and testing. After completion of the drilling operations, the boreholes were backfilled with excavated soil and capped with a compacted bituminous cold patch mixture, where necessary.

LABORATORY TESTING

Pavement core samples and soil samples from the borings were delivered to the G2 laboratory in Troy, Michigan for photographs and length measurements of the core samples and basic index tests on soil samples. Photographs and length measurements for the core samples are presented as Figure Nos. 19 through 31 in the Appendix.

Representative soil samples were subjected to laboratory testing to determine soil parameters pertinent to pavement design, foundation design, and underground utility construction. An experienced geotechnical engineer classified the samples in general conformance with the Unified Soil Classification System.

Laboratory testing included natural moisture content, dry density, organic matter content (loss-on-ignition), and unconfined compressive strength determinations. The organic matter content of representative samples was determined in accordance with ASTM Test Method D 2974, "Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils". The unconfined compressive strengths were determined by ASTM Test Method D2166 and using a spring-loaded hand penetrometer. Per ASTM D2166, the unconfined compressive strength of cohesive soils is determined by axially loading a small cylindrical soil sample under a slow rate of strain. The unconfined compressive strength is defined as the maximum stress applied to the soil sample before shear failure. If shear failure does not occur prior to a total strain of 15 percent, the unconfined compressive strength is defined as the stress at a strain of 15 percent. 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, organic matter content, dry density, and unconfined compressive strength laboratory tests are indicated on the soil boring logs at the depths the samples were obtained. Unconfined Compressive Strength Test are shown graphically on Figure Nos. 17 through 20 within the Appendix. 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

Ridge Road between Halyard Road and 5 Mile Road generally consists of a north bound and south bound travel lane with gravel/paved shoulders. Ridge Road is paved with Hot Mix Asphalt (HMA) pavements except for the portion of Ridge Road north of 5 Mile Road. The existing HMA along Ridge Road ranges in thickness from 5-1/2 to 6-3/4 inches at borings B-01 through B-13. A crushed limestone aggregate base is present beneath the HMA pavement and measures 3 to 18-1/4 inches thick at the borings B-01 through B-13. Approximately 12 inches of crushed limestone aggregate is present at the ground surface of boring B-14.

The pavement is generally in poor condition based upon surface distress which includes moderate to high severity fatigue, edge, block, transverse, and longitudinal cracking along most of the pavement surface. It appears some cold patching has been performed in the past. The pavements are crowned, allowing surface runoff water to drain into the adjacent paved shoulders, gravel shoulders, and greenbelt present along the pavement edge.

EXISTING SUBSURFACE CONDITIONS

Approximately 14 to 18 inches of topsoil are present at the ground surface of borings B-15 and B-16. Sandy clay fill with trace organic matter, underlies the pavement section within borings B-04, B-05, B-07, B-12, and B-13 and extend to depths ranging from 3 to 5-1/2 feet. Granular fill soils, consisting of sand, clayey sand, and gravelly sand, are present below the pavement section within borings B-01, B-06, B-08 through B-11, and B-14, and the sandy clay fill within boring B-07, and extend to depths ranging from 1-1/2 to 3 feet below grade within borings B-01, B-06, B-08 through B-11 and the explored depth of 5 feet within boring B-07. Native silty clay generally underlies the fill soils and/or pavement section within borings B-01 through B-06, B-08, B-10, and B-12 through B-16, and extends to depths ranging from 6-1/2 to 15 feet within borings B-10, B-15 and B-16 and the explored depths of 5 feet and 10 feet within borings B-01 through B-06, B-08, B-12, B-13, and B-14. Native granular soils, consisting of silty sand, sand, and sandy gravel, are present below the fill soils and/or native silty clay within borings B-09 through B-11, B-15, and B-16, and extend to the explored depth of 5 feet, 10 feet, and 25 feet. However, a stratum of native silty sand is present within the native silty clay within boring B-14 between 4 and 9-1/2 feet. In addition, native clayey sand underlies the topsoil within boring B-16 and extends to an approximate depth of 4 feet.

The sandy clay fill is stiff to hard in consistency with moisture contents ranging from 9 to 25 percent, organic matter contents ranging from 1.8 to 2.6 percent, a dry density of 118 pounds per cubic foot (pcf), and unconfined compressive strengths ranging from 3,500 to 9,000 pounds per square foot (psf). The granular fill soils are medium compact to compact with Standard Penetration Test (SPT) N-values ranging from 13 to 38 blows per foot (bpf). The native silty clay is generally stiff to very hard in consistency with natural moisture contents ranging from 13 to 18 percent, dry densities ranging from 108 to 121 pcf, and unconfined compressive strengths ranging from 2,000 to 17,060 psf. However, the native silty clay within the upper 6 feet within boring B-15 is medium to stiff with natural moisture contents ranging from 15 to 22 percent and unconfined compressive strengths ranging from 1,000 to 3,000 psf. The native granular soils are generally loose to compact with SPT N-values ranging from 6 to 42 bpf. However, the native clayey sand within the upper 4 feet of boring B-16 is very loose in compactness with a SPT N-value of 2 bpf.

Soil Boring Location Plan, Plate No. 1, Soil Boring Logs, Figure Nos. 1 through 16, and Unconfined Compressive Strength Test, Figure Nos. 17 through 20, are presented in the Appendix. Photographs of



the pavement core samples are included as Figure Nos. 21 through 33. The soil profiles described above are generalized descriptions of the conditions encountered at the boring location. General Notes Terminology defining the nomenclature used on the soil boring logs and elsewhere in this report are presented on Figure No. 34.

GROUNDWATER CONDITIONS

Groundwater was observed at depths ranging from 4 to 12-1/2 feet during drilling operations within soil boring B-13 through B-16. A wet collapse of the borehole was measured at depths ranging from 4-1/2 and 14-1/2 feet upon removal of the drilling augers within boring B-14 through B-16. No measurable groundwater was observed within boring B-13 upon completion of drilling operations. No measurable groundwater was observed within the remaining soil borings during or upon completion of drilling operations.

The long-term static groundwater level in the project area is expected to lie near the transition from brown to gray colored clay soils at approximately 11 to 12-1/2 feet below grade. Fluctuations in perched and long term groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation. It should also 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 RECOMMENDATIONS

General

We understand the existing pavements along Ridge Road within the project limits will be reconstructed. At the time of the investigation, finished site grades were not available; however, we anticipate the proposed pavements will be supported on the existing fill soils, native silty clay, or engineered fill placed over newly installed utilities. These soils should be suitable for support of proposed pavements following satisfactory completion of subgrade preparation operations as described in the Pavement Subgrade Preparation Recommendations section of this report. In general, cohesive soils are considered to be of poor quality for the direct support of conventional pavement structures, have poor drainage characteristics, and are considered to be highly frost susceptible.

Pavement Subgrade Preparation Recommendations

The existing HMA pavements and underlying aggregate base should be completely removed. The exposed subgrade should be graded to promote effective subsurface 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. Where granular subgrade soils are present, we recommend proof compacting these soils with a vibratory roller. We recommend the vibratory 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.

Given the existing cohesive subgrade conditions, we anticipate some subgrade treatment by undercut will be required during construction operations. We recommend construction operations be performed during the summer months and the exposed subgrade is not left exposed to rain events.

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 MDOT 21AA placed in an engineered manner. A drain tile should be placed at the deepest portion of subgrade undercuts and connected to the closest catch basin to prevent trapped water from



collecting in the granular cut soils or the subgrade should be sloped towards utility installation backfill to drain the undercut. 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 Design

We performed pavement design analyses in accordance with the "AASHTO Guide for Design of Pavement Structures". The subgrade soils will generally consist of fill soils, native silty clay, or engineered fill placed over utilities. Based on the existing 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 a subgrade resilient modulus of 5,500 pounds per square inch (psi).

No information regarding traffic counts or types were available upon completion of this report. Once traffic data becomes available, G2 requests to review this information and reevaluate the recommendations presented within this report. The proposed reconstructed pavement section along Ridge Road according to the Wayne County Road Commission consists of 10 inches of MDOT 3500HP PCC pavement over 12 inches of MDOT 21AA aggregate base. At the railroad crossing section south of 5 Mile Road, the proposed new HMA pavement section consists of 5 inches of HMA pavement over 12 inches of aggregate base.

For the proposed new pavement section, we estimated a serviceability loss of 2.0, a standard deviation of 0.39 for rigid pavements, 0.49 for flexible 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 analysis, we confirm the proposed PCC pavement section is suitable for proposed reconstruction and will support an Equivalent Single Axle Loads (ESALs) of 6.5 million vehicles over a 20 year design life. However, the proposed HMA per Wayne County Road Commission is not comparable to the proposed PCC section. Therefore, we recommend the railroad crossing pavement section consist of 1-1/2 inches of MDOT 5EMH HMA pavement wearing course, 1-1/2 inches of MDOT 4EMH HMA pavement leveling course, 6 inches of MDOT 3EMH HMA base course (placed in two equal lifts), supported on a minimum of 12 inches of MDOT 21AA aggregate base.

Aggregate base should consist of MDOT 21AA aggregate. MDOT 3500HP grade concrete is recommended for mainline paving. It is recommended that 3500HP 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. Binder grades PG 58-22 and PG 64-22 are 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.

All pavement materials are specified within the 2020 Standard Specifications for Construction from the Michigan Department of Transportation. The bituminous pavement materials are described in Section 501 and 904 and can be assigned a structural coefficient number of 0.42. The MDOT 21AA dense-graded aggregate base course can be assigned a structural coefficient number of 0.14. The aggregate materials for the subbase are described in Section 902. The concrete pavement materials are described in Section 1004.

Pavement Drainage

Proper pavement drainage is essential given the cohesive soil conditions. We recommend edge drains be provided continuously along the pavement edge 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 proposed aggregate base course or granular fill placed within undercut areas. These drains could be connected to nearby catch basins. In addition, we recommend a minimum of 2 finger drains be installed at each catch basin location, extending a minimum of 15 feet from the catch basin. The pavement and subgrade 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.

Pavement Maintenance

We recommend that the joints within newly constructed pavements be sealed with hot rubber to prevent moisture intrusion into the subgrade soils below, as well as prevent spalling of the joint due to material entering the joint. Regular timely maintenance should be performed on the pavement to reduce the potential deterioration associated with moisture infiltration through surface cracks. 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, regular joint maintenance should be performed.

FOUNDATION RECOMMENDATIONS

Based on MDOT standards, the foundation for the traffic signal poles may consist of a 36-inch or 42-inch diameter drilled pier foundation for strain poles with a height of 30 feet. For strain poles higher than 30-feet, the minimum foundation for strain pole traffic signals must consist of 42-inch diameter drilled pier foundations based on MDOT standards. The foundation depth depends on the supporting soils N-values or undrained shear strength, as described within the MDOT “Traffic Signal Strain Pole Foundation Design Table – SIG-DESIGN-153-A” dated February 15, 2011. The height of the strain poles was not available upon completion of this report, however, we estimate span lengths to be 145 feet from pole to pole locations. We recommend the proposed traffic signal strain poles be supported by foundations in accordance with the following table per MDOT standards:

Soil Boring	30 Foot Pole Length				36 Foot Pole Length		40 Foot Pole Length	
	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)
B-15	36	13	42	12-1/2	42	13	42	13-1/2
B-16	36	13	42	12-1/2	42	13	42	13-1/2

Note: Due to the presence of groundwater above the foundation bottom, temporary casing will be required within the drill pier excavation at the soil boring B-15 and B-16 locations.

The above recommendations are based on the MDOT Traffic Signal Strain Pole Foundation Design Table SIG-DESIGN-153-A using the encountered soil conditions, pole height assumptions, and span length assumption.

Soil parameters for foundation design are presented below.

Soil Boring B-15 (NW Quadrant)

Depth (feet)	Total Unit Weight (pcf)	Cohesion (psf)	Angle of Friction (Degrees)	Soil Modulus (pci)
0 to 6	125	1,500	0	300
6 to 12-1/2	135	3,250	0	650
12-1/2 to 16	125	0	34	60
16 to 25	135	0	36	125



Soil Boring B-16 (SE Quadrant)

Depth (feet)	Total Unit Weight (pcf)	Cohesion (psf)	Angle of Friction (Degrees)	Soil Modulus (pci)
0 to 4	110	0	30	25
4 to 11	135	4,000	0	700
11 to 15	130	2,250	0	600
15 to 25	125	0	34	60

We estimate strain pole foundation settlement will be negligible. We base this estimate on our experience with similar soil and loading conditions.

CONSTRUCTION CONSIDERATIONS

Groundwater was encountered within soil borings B-15 and B-16 at depths of 12-1/2 and 7 feet during drilling operations, respectively. Therefore, the contractor should come to the site prepared to use temporary telescoped steel casing, as necessary, to maintain a stable excavation during construction operations.

Once drilling is completed to the design depth, reinforcing steel should be set and concrete placed. If groundwater cannot be controlled with temporary casing, concrete must be placed by tremie methods until positive head of concrete has been established within the casing. This positive concrete head must be maintained while pulling the casing to prevent the infiltration of loose soil and groundwater into the fresh concrete. After concrete has been placed to an appropriate grade, the casing may be removed and concrete placement operations completed. Telescoped casing must be removed in the opposite order in which it is installed (i.e. – from the inside out).

To reduce lateral movement of the drilled pier foundations, the contractor must place the concrete for the piers in intimate contact with undisturbed soil. Fill any voids or enlargements in the drilled pier shaft excavations with concrete at the time of drilled pier concrete placement. We recommend using a concrete mix design with a slump of 5 to 7 inches for free fall placement and 7 to 9 inches for tremie placement to reduce the potential for concrete arching and provide a workable material.

We recommend using a temporary form, such as sono tube, to form the top portion of the drilled piers. The use of this top form is a very beneficial aid to the correct placement and orientation of the anchor bolts on free-standing towers.

Underground utilities are present in close proximity to the proposed traffic signal foundations. The contractor should be prepared to expose and protect the existing utilities from damage during construction operations.

STORM SEWER CONSTRUCTION RECOMMENDATIONS

General

It is our understanding that new storm sewer will be constructed in conjunction with the proposed roadway reconstruction. We anticipate the storm sewer will be constructed within open-cut excavations with invert depths between 5 and 6 feet below existing grades. Once the proposed project profile becomes available and the installation methods for each segment of the storm sewer and manholes have been established, G2 should be notified so that we can review our recommendations presented herein.

Excavations

Temporary unshored trench excavations for any proposed open-cut storm sewer and manhole installation operations must be sloped back at a minimum of 1-1/2H:1V (horizontal: vertical) within the existing loose to compact granular soils and medium cohesive soils, 1H:1V within the stiff cohesive soils



and 3/4H:1V within the very stiff to very hard silty clay. 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. If the temporary construction slopes are to be maintained during the rainy season, berms are suggested along the tops of the embankments to prevent runoff water from entering the excavation and eroding the slope faces. 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 brace 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.

Groundwater Control

Groundwater was encountered within the soil borings B-13 and B-14 at approximate depth of 8 feet and 4 feet, respectively, during drilling operations. No measurable groundwater was observed within the remaining borings during drilling operations. The proposed storm sewer and manhole inverts may range from 5 to 6 feet below existing grades. We anticipate any groundwater seepage or surface runoff can be controlled within construction excavations with pumping from properly constructed sumps.

Pipeline Bottom Support

We anticipate the subgrade soils within the storm sewer excavations will consist of stiff to hard native silty clay and loose to medium compact granular soils. These soils appear to be satisfactory for excavation bottoms. However, differential movements of the pipeline may occur if the starter pit subgrade is not adequately stabilized. If instability of any excavation is present or develops, we recommend the removal of the yielding soils and placement of at least a 1-foot thick stabilization layer across the bottom of the excavation. The stabilization material may consist of MDOT 6A gravel.

Trench Backfill

The existing fill soils and native silty clay encountered within the soil borings are not suitable to be reused as engineered within construction excavations. In general, we recommend a bedding material, consisting of open grade crushed material, such as MDOT 6A gravel, then clean engineered fill, such as MDOT Class II Sand, can be used to backfill the around the sewer and the remainder of the utility trench. The Class II Sand 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 be free of organic matter, frozen soil, clods, or other harmful 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 materials 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 2003, revised 2018. 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 foundation construction, underground utility construction, site preparation, and pavement reconstruction on the basis of data provided to us relating to the general location for the proposed project. 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 support of the new foundations, underground utilities, pavements, and other related aspects of the development. No chemical, environmental, or hydrogeological testing or analyses 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 site preparation and pavement 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 16
Unconfined Compression Test Results	Figure Nos. 17 through 20
Pavement Core Sample Photographs	Figure Nos. 21 through 33
General Notes Terminology	Figure No. 34



Google Earth
© 2018 Google

Legend



Legend

⊙ Pavement Core/Soil Borings performed by Strata Drilling, Inc. on March 1 and 2, 2022

Soil Boring Location Plan

5 Mile Corridor Project
Ridge Road: 5 Mile to Halyard Drive
Plymouth and Northville Townships, Michigan



Project No. 143288	
Drawn by: JMH	
Date: 9/19/22	Plate No. 1
Scale: NTS	

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. B-01

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (5-1/2 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (7-1/2 inches)	1.1						
		Fill: Brown Sand with trace silt and gravel	1.5	S-1	3 5 7	12	16.1	117	14460
5		Hard to Very Hard Brown and Gray Silty Clay with trace sand and gravel	5	S-2	8 10 12	22	16.3	116	14280
				S-3	8 11 12	23	16.5	116	17060
10		Very Stiff Brown and Gray Silty Clay with trace sand and gravel	8.0	S-4	4 7 7	14	16.9	114	6930
		End of Boring @ 10 ft	10.0						
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 2, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

Figure No. 1

SOIL / PAVEMENT BORING_143288 RIDGE.GPJ_20150116 G2 CONSULTING DATA TEMPLATE.GDT_9/26/22

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-02**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (8 inches)	1.2		4				
		Very Hard Brown and Gray Silty Clay with trace sand and gravel	3.0	S-1	7	12	16.0	120	16350
5		Very Stiff Brown and Gray Silty Clay with trace sand and gravel	5.0	S-2	12	25	13.6		7500*
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 2, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 2

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-03**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (5-1/2 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (6-1/2 inches)	1.0						
		Very Stiff to Hard Brown and Gray Silty Clay with trace sand and gravel		S-1	5 6 9	15	15.6		4500*
5			5.0	S-2	8 12 15	27	16.0	118	14780
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 2, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING_143288 RIDGE.GPJ_20150116 G2 CONSULTING DATA TEMPLATE.GDT_9/26/22

Figure No. 3

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. B-04

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (8 inches)	1.2		4				
		Fill: Stiff Dark Brown Sandy Clay with trace silt, gravel, and organic matter (Organic Matter Content = 2.6%)	3.0	S-1	6	11	17.3		3500*
5		Hard Brown and Gray Silty Clay with trace sand and gravel	5.0	S-2	10				
			5		9	18	13.4	121	11190
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING_143288 RIDGE.GPJ_20150116 G2 CONSULTING DATA TEMPLATE.GDT_9/26/22

Figure No. 4

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. B-05

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (5-1/2 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (7-1/2 inches)	1.1						
		Fill: Hard Brown Sandy Clay with trace silt and gravel		S-1	6 6 5	11	14.2	118	8100
5			5	S-2	4 12 16	28	9.2		9000*
		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel, occasional sand seams	5.5						
				S-3	4 4 6	10	18.4		3000*
10			10	S-4	4 6 10	16	13.4		5000*
		End of Boring @ 10 ft	10.0						
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 5

Project Name: 5 Mile Corridor Project

Project Location: Ridge Road: 5 Mile Road to Halyard Road
Plymouth/Northville Township, Michigan

G2 Project No. 143288

Latitude: N/A Longitude: N/A



Soil Boring No. B-06

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (5-3/4 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (18-1/4 inches)	2.0						
		Fill: Compact Brown Sand with trace silt and gravel	2.5	S-1	20 23 12	35			
5		Very Stiff to Hard Brown and Gray Silty Clay with trace sand and gravel	5	S-2	5 9 11	20	15.0	119	13130
				S-3	4 8 13	21	14.8		6500*
10				S-4	5 8 8	16	15.0	119	6440
			End of Boring @ 10 ft	10.0					
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 6

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-07**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (5-3/4 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (9-1/4 inches)	1.3						
		Fill: Stiff Brown and Dark Brown Sandy Clay with trace silt and gravel		S-1	20 8 3	11	24.5		3500*
5		Fill: Medium Compact Brown Gravelly Sand with trace silt	4.5 5.0	S-2	6 9 4	13			
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 7

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-08**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6-1/4 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (5-3/4 inches)	1.0						
		Fill: Brown Sand with trace silt and gravel	1.5	S-1	5 9 7	16	19.0	113	2750
		Stiff Brown and Gray Silty Clay with trace sand and gravel, occasional sand seams							
5			5.0	S-2	3 3 4	7	17.5	115	3510
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING_143288 RIDGE.GPJ_20150116 G2 CONSULTING DATA TEMPLATE.GDT_9/26/22

Figure No. 8

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-09**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (7 inches)	1.1						
		Fill: Compact Brown Clayey Sand with trace silt and gravel	2.5	S-1	26 19 19	38			
5		Loose Brown Silty Sand with trace gravel, occasional clay seams	5.0	S-2	8 6 3	9			
		Loose Brown Sand with trace silt and gravel		S-3	3 3 3	6			
10			10.0	S-4	3 3 3	6			
		End of Boring @ 10 ft							
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 9

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-10**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6-3/4 inches)	0.6						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (11-1/4 inches)	1.5						
		Fill: Compact Brown Clayey Sand with trace silt and gravel	3.0	S-1	13 24 12	36			
5		Hard Brown and Gray Silty Clay with trace sand and gravel	5	S-2	5 6 7	13	15.3	117	8980
			6.5						
		Loose Brown Sand with trace silt and gravel		S-3	4 4 3	7			
10			10.0	S-4	3 3 5	8			
		End of Boring @ 10 ft							
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 10

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-11**
CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (6 inches)	0.5						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (18 inches)	2.0						
		Fill: Compact Brown Clayey Sand with trace silt and gravel	3.0	S-1	23 26 10	36			
5		Medium Compact Brown Silty Sand with trace gravel, occasional clay seams	5.0	S-2	6 6 7	13			
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. B-12

CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (7 inches)	0.6						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (6 inches)	1.2						
		Fill: Very Stiff Black Sandy Clay with trace silt, gravel, and organic matter (Organic Matter Content = 1.8%)	3.5	S-1	7 5 8	13	11.2		4000*
5		Stiff Brown and Gray Silty Clay with trace sand and gravel	5.0	S-2	7 5 4	9	15.7		3000*
		End of Boring @ 5 ft							
10			10						
15			15						
20			20						
25			25						
30			30						

Total Depth: 5 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 Dry during and upon completion

Notes:
 NB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 12

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-13**
CONSULTING GROUP

SUBSURFACE PROFILE			SOIL SAMPLE DATA						
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		HMA Pavement (7 inches)	0.6						
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (3 inches)	0.8						
		Fill: Very Stiff Black Sandy Clay with trace silt, gravel, and organic matter (Organic Matter Content = 1.9%)	3.0						
5		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel	5	S-1	11 9 7	16	9.7		5000*
			5	S-2	3 4 4	8	22.4	108	3420
				S-3	5 7 7	14	16.5		4500*
10				S-4	4 6 8	14	16.3	121	7510
		End of Boring @ 10 ft	10.0						
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 8 feet during; dry upon completion

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 6-inch diameter diamond tipped core barrel; 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings and capped with cold patch

Figure No. 13

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-14**
CONSULTING GROUP

SUBSURFACE PROFILE			SOIL SAMPLE DATA						
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Crushed Limestone Aggregate Base: Gray Sand and Gravel with trace silt (12 inches)	1.0						
		Fill: Brown Clayey Sand with trace silt and gravel	1.5						
		Stiff Brown and Gray Silty Clay with trace sand and gravel	4.0	S-1	4 4 3	7	13.1		2000*
5			5	S-2	4 5 4	9			
		Loose to Medium Compact Brown Silty Sand with trace gravel, occasional clay seams		S-3	5 6 5	11			
10		Very Stiff Brown and Gray Silty Clay with trace sand and gravel	9.5 10.0	S-4	9 10 7	17	16.6		5000*
		End of Boring @ 10 ft							
15			15						
20			20						
25			25						
30			30						

Total Depth: 10 ft
 Drilling Date: March 2, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 4 feet during; wet cave measured at 4-1/2 feet upon
 removal of augers

Notes:
 SB Ridge Road
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Figure No. 14

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. B-15

SUBSURFACE PROFILE			SOIL SAMPLE DATA						
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Silty Clay (18 inches)	1.5		2				
		Medium to Stiff Brown Silty Clay with trace sand and gravel	5	S-1	2	4	21.6		1000*
				S-2	4	9	14.7		3000*
		Very Stiff to Hard Brown and Gray Silty Clay with trace sand and gravel	6.0	S-3	7	23	15.8		7000*
				S-4	10	27	13.6		8500*
		Very Stiff Gray Silty Clay with trace sand and gravel	11.0		4				
		Medium Compact Gray Sandy Gravel with trace silt	15	S-5	8	17	15.2		5000*
				S-6	9	14			
		Medium Compact to Compact Gray Silty Sand with trace gravel	16.0	S-7	7	29			
				S-8	12	42			
			20	S-9	10				
				S-10	21	42			
			25	S-9	9	42			
				S-10	25	35			
		End of Boring @ 25 ft	25.0						
			30						

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Total Depth: 25 ft
 Drilling Date: March 2, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

Water Level Observation:
 12-1/2 feet during; wet cave measured at 14-1/2 feet upon removal of augers

Notes:
 NW Corner of Ridge Road and 5 Mile Road
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings

Figure No. 15

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan
 G2 Project No. 143288
 Latitude: N/A Longitude: N/A



Soil Boring No. **B-16**
G2 CONSULTING GROUP

SUBSURFACE PROFILE			SOIL SAMPLE DATA						
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Topsoil: Dark Brown Clayey Sand (14 inches)	1.2						
		Very Loose Brown Clayey Sand with trace silt and gravel	4.0	S-1	1 1 1	2			
5		Very Stiff Brown and Gray Silty Clay with trace sand and gravel	6.0	S-2	3 4 6	10	21.8	108	5220
		Hard Brown and Gray Silty Clay with trace sand and gravel	11.0	S-3	4 7 12	19	17.2	116	9490
10		Stiff to Very Stiff Gray Silty Clay with trace sand and gravel, occasional sand seams	15.0	S-4	10 14 15	29	16.1	117	12170
		Medium Compact Gray Sandy Gravel with trace silt	18.0	S-5	4 8 8	16	17.3	118	5700
15		Medium Compact to Compact Gray Silty Sand with trace gravel	25.0	S-6	5 8 8	16	17.0	120	3300
		End of Boring @ 25 ft	25.0	S-7	7 9 11	20			
20			20	S-8	9 16 18	34			
			25	S-9	7 14 16	30			
25			25	S-10	7 9 11	20			
30			30						

SOIL / PAVEMENT BORING 143288 RIDGE.GPJ 20150116 G2 CONSULTING DATA TEMPLATE.GDT 9/26/22

Total Depth: 25 ft
 Drilling Date: March 1, 2022
 Inspector: DJ Radich, P.E.
 Contractor: Strata Drilling, Inc.
 Driller: D. Watkins

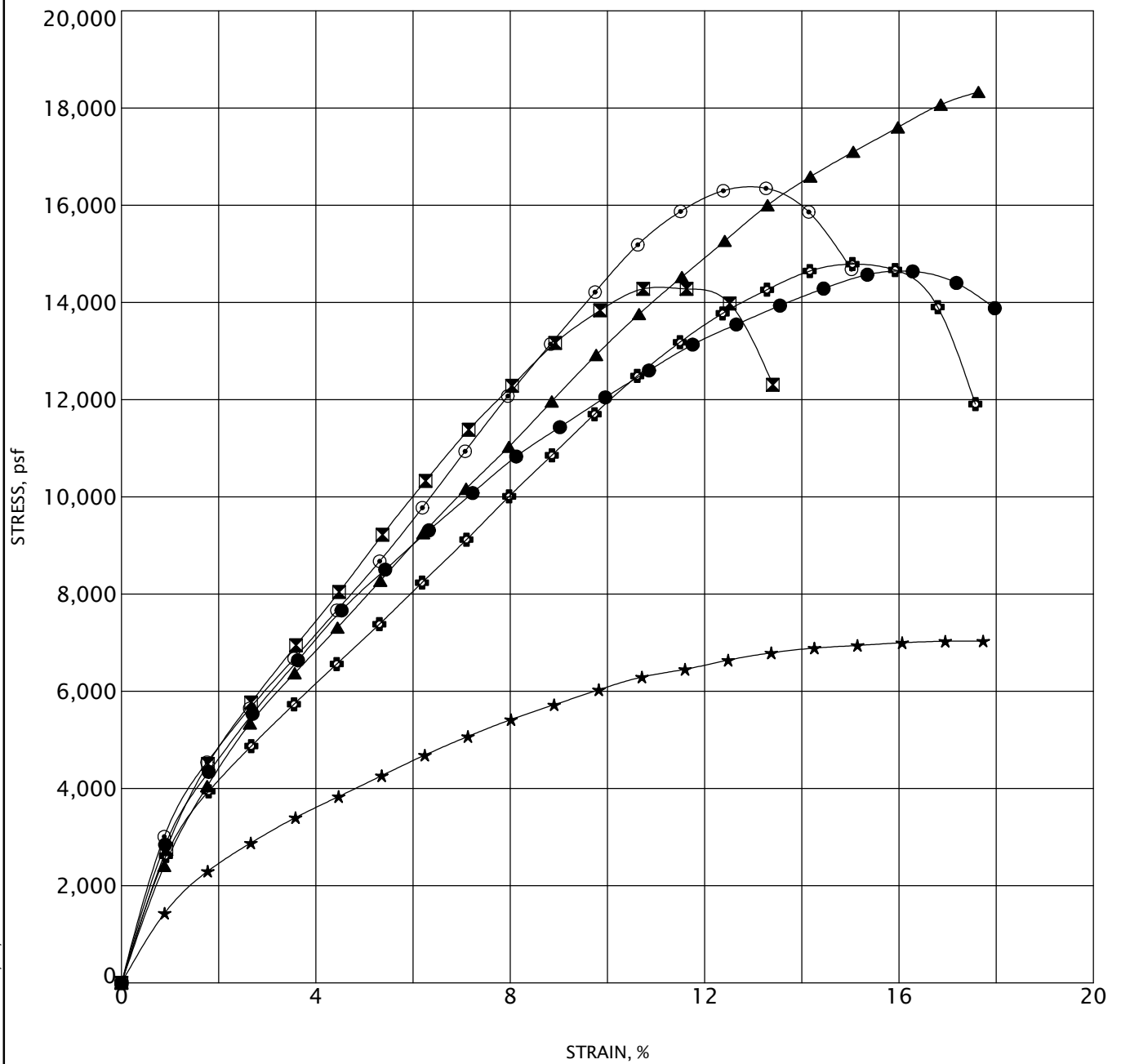
Water Level Observation:
 7 feet during; wet cave measured at 8 feet upon removal of augers

Notes:
 SE Corner of Ridge Road and 5 Mile Road
 * Calibrated Hand Penetrometer

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
 Auger cuttings

Figure No. 16



Specimen	Classification	MC%	γ_d	UC
● B-01 S-1	Brown and Gray Silty Clay	16	117	14460
⊠ B-01 S-2	Brown and Gray Silty Clay	16	116	14280
▲ B-01 S-3	Brown and Gray Silty Clay	16	116	17060
★ B-01 S-4	Brown and Gray Silty Clay	17	114	6930
⊙ B-02 S-1	Brown and Gray Silty Clay	16	120	16350
⊕ B-03 S-2	Brown and Gray Silty Clay	16	118	14780

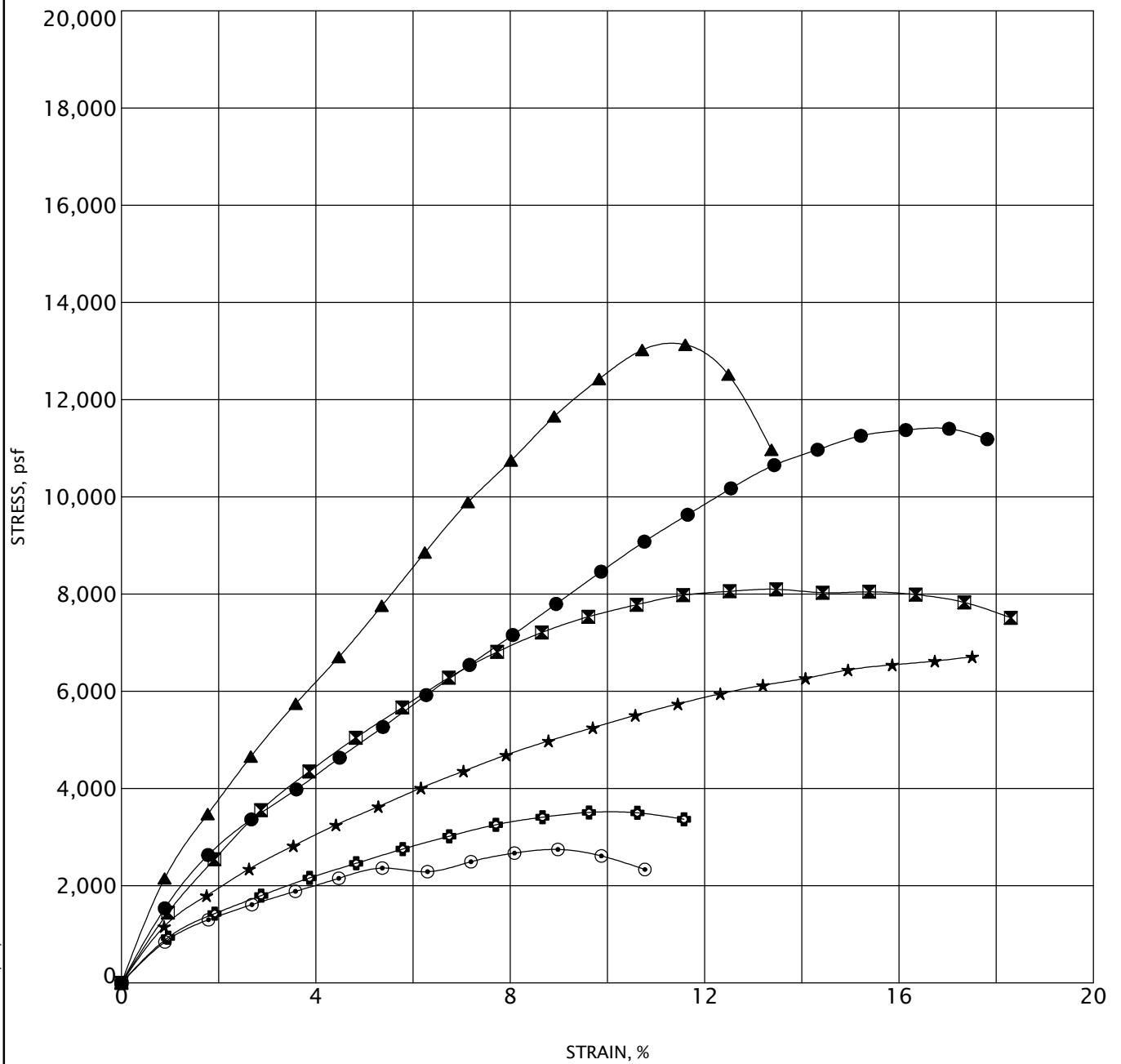
UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan

G2 Project No.: 143288

Figure No. 17





Specimen	Classification	MC%	γ_d	UC
● B-04 S-2	Brown and Gray Silty Clay	13	121	11190
⊠ B-05 S-1	Brown Sandy Clay	14	118	8100
▲ B-06 S-2	Brown and Gray Silty Clay	15	119	13130
★ B-06 S-4	Brown and Gray Silty Clay	15	119	6440
⊙ B-08 S-1	Brown and Gray Silty Clay	19	113	2750
⊞ B-08 S-2	Brown and Gray Silty Clay	17	115	3510

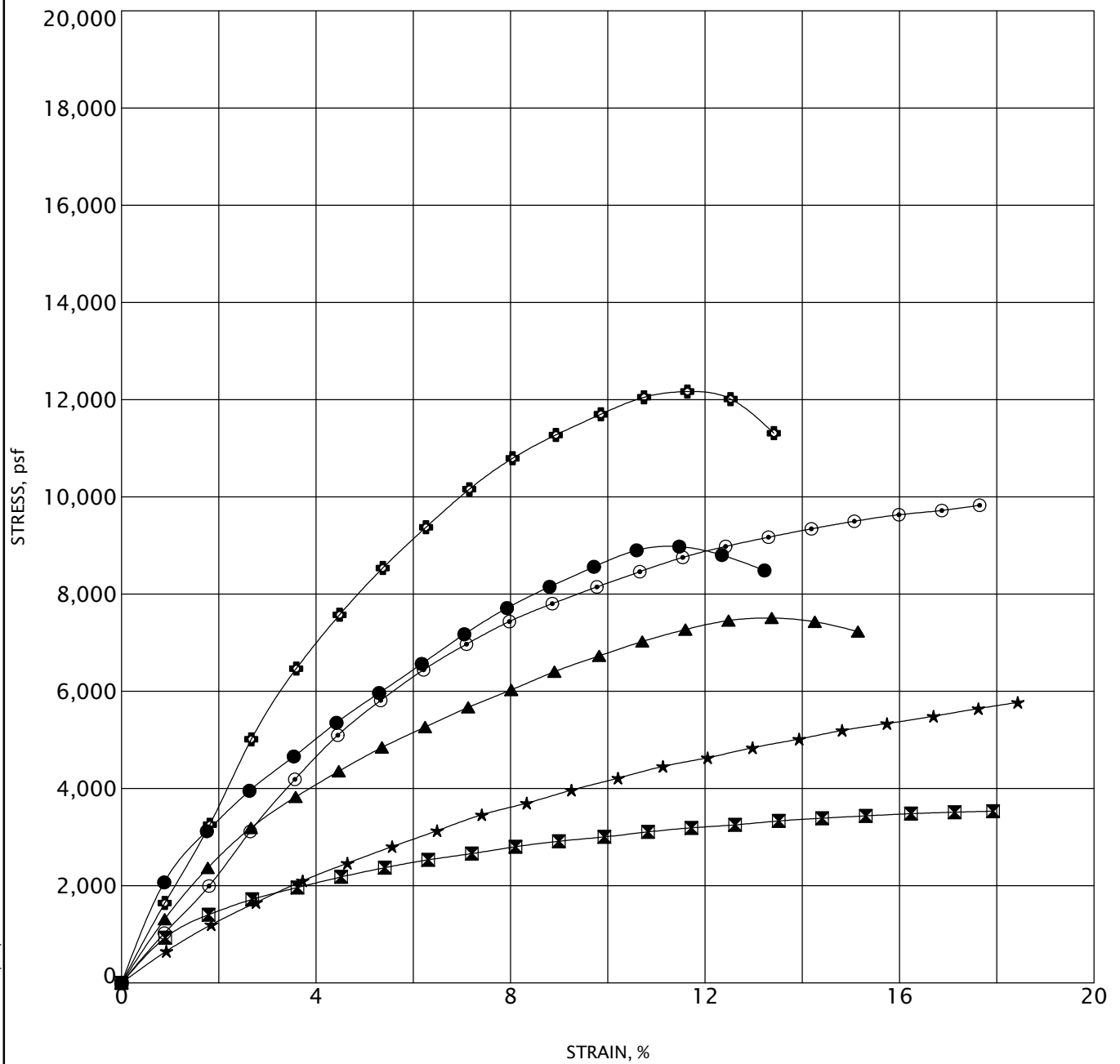
UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan

G2 Project No.: 143288

Figure No. 18





Specimen	Classification	MC%	γ_d	UC
● B-10 S-2	Brown and Gray Silty Clay	15	117	8980
⊠ B-13 S-2	Brown and Gray Silty Clay	22	108	3420
▲ B-13 S-4	Brown and Gray Silty Clay	16	121	7510
★ B-16 S-2	Brown and Gray Silty Clay	22	108	5220
⊙ B-16 S-3	Brown and Gray Silty Clay	17	116	9490
⊕ B-16 S-4	Brown and Gray Silty Clay	16	117	12170

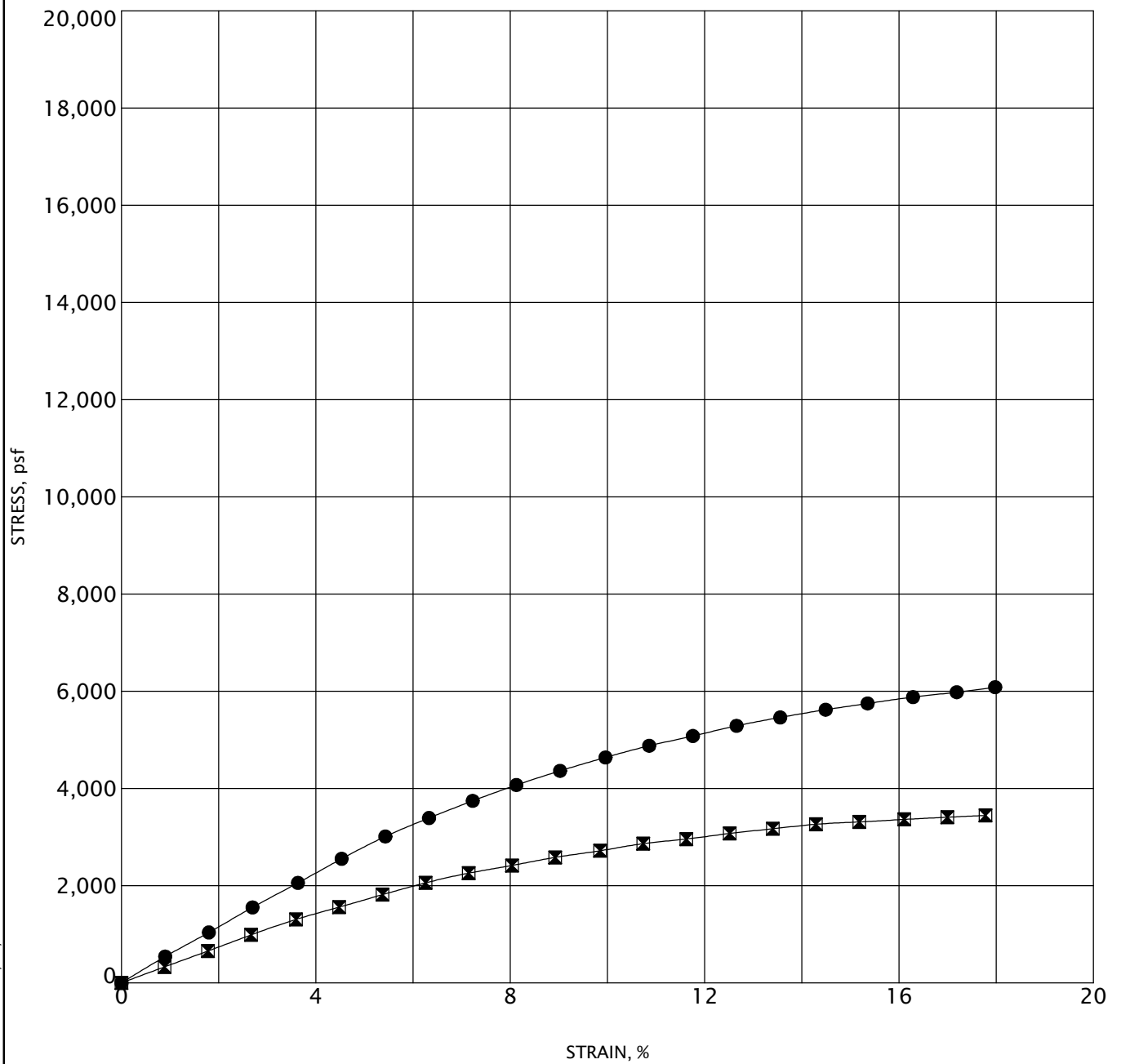
UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan

G2 Project No.: 143288

Figure No. 19





Specimen	Classification	MC%	γ_d	UC
● B-16 S-5	Gray Silty Clay	17	118	5700
⊠ B-16 S-6	Gray Silty Clay	17	120	3300

UNCONFINED COMPRESSIVE STRENGTH TEST

Project Name: 5 Mile Corridor Project
 Project Location: Ridge Road: 5 Mile Road to Halyard Road
 Plymouth/Northville Township, Michigan

G2 Project No.: 143288

Figure No. 20



Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-01: HMA Pavement = 5-1/2 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-02: HMA Pavement = 6 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-03: HMA Pavement = 5-1/2 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-04: HMA Pavement = 6 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-05: HMA Pavement = 5-1/2 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-06: HMA Pavement = 5-3/4 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-07: HMA Pavement = 5-3/4 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-08: HMA Pavement = 6-1/4 inches

**Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288**



Core Photograph of B-09: HMA Pavement = 6 inches

(Core Photograph Not Available)

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-10: HMA Pavement = 6-3/4 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-11: HMA Pavement = 6 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-12: HMA Pavement = 7 inches

Photographic Documentation
5 Mile Corridor Project: Ridge Road
Plymouth Township and Northville Township, Michigan
G2 Project No. 143288



Core Photograph of B-13: HMA Pavement = 7 inches

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).