APPENDIX L Bid Package – Johnson Creek

Bidding and Contract Documents Conditions of the Contract and Specifications

ROUGE RIVER AOC JOHNSON CREEK- FISH HATCHERY PARK HABITAT RESTORATION PROJECT

March 2020



Issued by:

ALLIANCE OF ROUGE COMMUNITIES

In partnership with City of Northville



Funded by the U.S. Environmental Protection Agency through the Great Lakes Restoration Initiative, Award GL-00E02344-0 (Project Design) and GL-00E02478-0 (Project Implementation)

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ADVERTISEMENT TO BID

PROJECT: Rouge River AOC Johnson Creek- Fish Hatchery Park

Habitat Restoration Project

BID MAIL-IN: Bids must be mailed to the City of Northville City Clerk's office, post-

marked by Wednesday, April 29, 2020 to be considered

BID OPENING: Via tele-conference Wednesday, May 6, 2020 at 10:00 AM

NOTICE:

Sealed bids shall be mailed to the City of Northville at the City Clerk's office at 215 W. Main Street, Northville, MI 48167. Bids must be post-marked by Wednesday, April 29, 2020 to be considered. Bids will be opened publicly via a conference call line on Wednesday May 6, 2020 at 10:00 AM, and a bid tabulation will be made available once bids have been reviewed. Bids shall be addressed as follows:

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project

PROJECT DECRIPTION:

This project is funded by the Environmental Protection Agency through a Great Lake Restoration Initiative Grant. The project work generally consists of:

- Removal of 3560 CY of sediment from Fish Hatchery Pond
- Modify the pond outlet to create a fish passage channel between the pond and the creek
- Woody debris removal
- Naturalization of 900 LF of stream channel, which includes removal of concrete wall, creation of floodplain bench, installation of 4 rock vane structures, grading, and revegetation.
- Installation of 400 LF of sheet pile wall with approximately 190 LF of handrail
- Construction of a vegetated swale

WATER LEVELS:

The proposed work is within a river system and floodplain. In preparation of a bid, the contractor must understand that the water level fluctuates frequently. The contractor shall understand and acknowledge that they have taken into account the potential for any water level changes that might occur in costing and performing the contract work. The contractor shall acknowledge that any fluctuation in water levels during/over the course of the project will most likely happen and will not constitute a change in conditions or an unforeseen site condition.

CONTRACT DOCUMENTS:

The Drawings and Specifications under which work is to be done may be obtained from the Michigan Intergovernmental Trade Network (MITN).

PRE-BID CONFERENCE CALL/WEBINAR

There will be a pre-bid webinar/conference call held at **10:00 AM on Tuesday, April 7, 2020**. There are two options to attend: To participate in the webinar, Contractors can join the webinar live from a computer, tablet, or smartphone or dial in by telephone. Please pre-register for the

webinar by emailing Alice Bailey at <u>abailey@ectinc.com</u> no later than 12:00 PM on April 6, 2020. During the webinar, ECT will confirm attendance.

Online Webinar Option: If viewing the webinar live, use the following link on a computer, tablet, or smartphone: https://global.gotomeeting.com/join/655233037 The webinar will be presented using the application GoToMeeting. This application can be installed prior to the start of the meeting using the following link: https://global.gotomeeting.com/install/655233037

<u>Telephone Only Option:</u> If you are unable to join via webinar and will only be dialing in by telephone, dial (571) 317-3122 and enter the access code 655-233-037. Contractors must notify Alice Bailey at <u>abailey@ectinc.com</u> by 12:00 PM on April 6, 2020 to request a copy of the presentation materials so they may be referenced during the presentation.

QUESTIONS

Questions may be submitted, in writing, to the project engineer, Alice Bailey, P.E. at abailey@ectinc.com by **12:00 PM on Friday, April 17, 2020**. Reply will be issued via Addendum, if necessary.

BIDDING INSTRUCTIONS AND SECURITY:

Bids shall be submitted in accordance with, and upon, the original forms included in the Contract Documents. No Bid shall be withdrawn for a period of 90 days after the actual date of opening thereof. No bid will be received or considered unless accompanied by a Bid Guaranty, payable to the City of Northville in an amount not less than 5% of the base bid amount. Proposals submitted by Bidders who have been debarred, suspended, or made ineligible by any Federal agency will be rejected.

A description of the Bidder's qualifications shall be included in each bid. This shall include:

- Bidder's overall qualifications (1 page max);
- A description of the Bidder's experience, with 3 project examples that are similar or contain similar components to the proposed project (2 pages max); and
- A description of the Bidder's general planned approach for this project with tentative schedule (4 pages max + schedule).

Bidder's qualifications will be considered when selecting a contractor.

Each bidder agrees to waive any claim it has or may have against the Owner, the architect/Engineer, and their representative employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

AWARD OF CONTRACT

The successful bidder will be required to furnish satisfactory Performance Bond, Labor and Material Bonds, and Maintenance Bond, each in the full amount of the contract.

The successful bidder will enter an agreement with the project Owner, which is defined as the City of Northville and the Alliance of Rouge Communities.

The City of Northville and the Alliance of Rouge Communities reserve the right to reject any or all bids, to waive irregularities and informalities therein, and to award the Contract as deemed to be in the best interest of the project.

MBE/WBE

The Contractor to comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises contained in 40 CFR, Part 33. The Contractor shall agree to meet the following MBE/WBE fair share objectives/goals:

MBE: 10% WBE: 7.5%

Bidders must follow, document, and maintain documentation of the Good Faith Efforts, to ensure that Disadvantage Business Enterprises (DBE) have the opportunity to participate in the project by increasing awareness of procurement efforts and outreach as instructed in the grant award attached.

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 - DEFINED TERMS

A. *Issuing Office*--The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

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

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

- 2.01 Bidding Documents can be obtained on the date and at the location as specified in the Advertisement to Bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 A description of the Bidder's qualifications shall be included in each bid. This shall include:
 - Bidder's overall qualifications (1 page max);
 - A description of the Bidder's experience, with 3 project examples that are similar or contain similar components to the proposed project (2 pages max); and
 - A description of the Bidder's general planned approach for this project with tentative schedule (4 pages max + schedule).
- 3.02 To demonstrate Bidder's qualifications to perform the Work, within five days of Owner's request, Bidder shall submit additional information including: written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.01 Subsurface and Physical Conditions
 - A. The Supplementary Conditions identify:
- 1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Bidding Documents.
- 2. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Bidding Documents.
- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder per the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any data, interpretations, opinions or information contained in such reports or shown or indicated in such drawings.
- 4.02 Underground Facilities
- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities.
- 4.03 Hazardous Environmental Condition
- A. The Supplementary Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that Engineer has used in preparing the Bidding Documents.

- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of 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.
- 4.04 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 conditions appear in Paragraphs 4.02, 4.03, and 4.04 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 4.06 of the General Conditions.
- 4.05 On request, Owner will entertain requests for Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. If granted, 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. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.
- 4.06 The Supplementary Conditions contains identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors), if any, that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such other work.
- 4.07 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;
- B. The Contractor must have visited the project site prior to bidding to become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local 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 contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions, and (2) reports and drawings of Hazardous Environmental Conditions at the Site, if any, which have been identified in the Supplementary Conditions;
- E. obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;
- F. agree at the time of submitting its Bid that 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(s) bid and within the times 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, if any, at the Site that relates to the Work as indicated in the Bidding Documents;
- H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

- I. 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; and
- J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 - PRE-BID CONFERENCE CALL/WEBINAR

- 5.01 There will be a pre-bid webinar held at 10:00 AM on Tuesday, April 7, 2020. To view the webinar, Contractors can join the webinar live from a computer, tablet, or smartphone or dial in by telephone. Contractors must register for the webinar by emailing Alice Bailey at abailey@ectinc.com no later than 12:00 PM on April 6, 2020. During the webinar, ECT will confirm attendance.
- 5.02 If viewing the webinar live, use the following link on a computer, tablet, or smartphone: https://global.gotomeeting.com/join/655233037 The webinar will be presented using the application GoToMeeting. This application can be installed prior to the start of the meeting using the following link: https://global.gotomeeting.com/install/655233037
- 5.03 If dialing in by telephone, dial (571) 317-3122 and enter the access code 655-233-037. Contractors must notify Alice Bailey at abailey@ectinc.com by 12:00 PM on April 6, 2020 to request a copy of the presentation materials for reference during the presentation.

ARTICLE 6 - SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Project Engineer at abailey@ectinc.com in writing by 12:00 PM on Friday, April 17, 2020. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of <u>5%</u> percent of Bidder's maximum Bid price and in the form of a certified check or bank money order or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until 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 returned. 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 annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom 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 Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

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

ARTICLE 10 - LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or those substitute or "or-equal" materials and equipment approved by Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. No item of material or equipment will be considered by Engineer as a substitute or "or-equal" unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. 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, individual, or entity if requested by Owner. 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 a substitute,

- 12.02 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, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 - PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- 13.02 All blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid 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, alternative, adjustment unit price item, and unit price item] listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.
- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member 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 below the signature.
- 13.06 A Bid by an individual shall show the Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.
- 13.08 All names shall be typed or printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 The address and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

- 14.01 Unit Price
 - A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 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. Discrepancies between words and figures will be resolved in favor of the words.
- 14.02 The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.
- 14.03 Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9.

ARTICLE 15 - SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security.

15.02 A Bid shall be mailed to the place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked 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. The sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and must be post-marked by the date indicated in the Advertisement for Bid. The mailed Bid shall be addressed to City of Northville, 215 W. Main Street, Northville, MI 48167.

15.03 A description of the Bidder's qualifications shall be included in each bid. This shall include:

- Bidder's overall qualifications (1 page max);
- A description of the Bidder's experience, with 3 project examples that are similar or contain similar components to the proposed project (2 pages max); and
- A description of the Bidder's general planned approach for this project with tentative schedule (4 pages max + schedule).

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the 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. Note the office hours times as provided in the Advertisement.

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

ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened publicly via a conference call line, and a bid tabulation will be made available once bids have been reviewed. An abstract of the amounts of the base bids and major alternates, if any, will be made available to bidders after the opening of bids.

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 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.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.

ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

20.01 Article 5 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 executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 - SIGNING OF AGREEMENT

21.01 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SPECIAL REQUIRMENTS

Construction work is being funded by the Great Lakes Restoration Initiative (GLRI). All construction contracts associated with this work are subject to specific terms and conditions that may not necessarily be standard in typical construction contracts. It shall be the responsibility of the BIDDER to review all information and account for any of the listed GLRI terms and conditions in his bid. The CONTRACTOR shall comply with the following Federal Requirements:

22.01 Signage

Construction Sign: All projects funded by the GLRI must display signage in a prominent location throughout the construction phase. CONTRACTOR shall construct the sign in accordance with the specifications provided in the Appendix. This sign may be a vinyl type sign affixed to the barge equipment that will be operating at the project site, or something similar.

22.02 *MBE/WBE*

The Contractor to comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises contained in 40 CFR, Part 33. The Contractor shall agree to meet the following MBE/WBE fair share objectives/goals:

MBE: 10% WBE: 7.5%

Bidders must follow, document, and maintain documentation of the Good Faith Efforts, to ensure that Disadvantage Business Enterprises (DBE) have the opportunity to participate in the project by increasing awareness of procurement efforts and outreach as instructed in the grant award attached.

Act No. 517
Public Acts of 2012
Approved by the Governor
December 28, 2012
Filed with the Secretary of State
December 28, 2012
EFFECTIVE DATE: April 1, 2013

96TH LEGISLATURE REGULAR SESSION OF 2012

Introduced by Senators Kahn, Marleau, Brandenburg, Anderson, Green and Booher

ENROLLED SENATE BILL No. 1024

AN ACT to prohibit persons who have certain economic relationships with Iran from submitting bids on requests for proposals with this state, political subdivisions of this state, and other public entities; to require bidders for certain public contracts to submit certification of eligibility with the bid; to require reports; and to provide for sanctions for false certification.

The People of the State of Michigan enact:

- Sec. 1. This act shall be known and may be cited as the "Iran economic sanctions act".
- Sec. 2. As used in this act:
- (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 extends \$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).

(275)

- (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.
- Sec. 3. (1) Beginning April 1, 2013, an Iran linked business is not eligible to submit a bid on a request for proposal with a public entity.
- (2) Beginning April 1, 2013, a public entity shall require a person that submits a bid on a request for proposal with the public entity to certify that it is not an Iran linked business.
- Sec. 4. If a public entity determines, using credible information available to the public, that a person has submitted a false certification under section 3(2), the public entity shall provide the person with written notice of its determination and of the intent not to enter into or renew a contract with the person. The notice shall include information on how to contest the determination and specify that the person may become eligible for a future contract with the public entity if the person ceases the activities that cause it to be an Iran linked business. The person shall have 90 days following receipt of the notice to respond in writing and to demonstrate that the determination of false certification was made in error. If a person does not make that demonstration within 90 days after receipt of the notice, the public entity may terminate any existing contract and shall report the name of the person to the attorney general together with information supporting the determination.
- Sec. 5. The attorney general may bring a civil action against any person reported under section 4. If a civil action results in a finding that the person submitted a false certification, the person is responsible for a civil penalty of not more than \$250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the public entity's investigation, and reasonable attorney fees, in addition to the fine. A person who submitted a false certification shall be ineligible to bid on a request for proposal for 3 years from the date the public entity determines that the person has submitted the false certification.
- Sec. 6. The provisions of this act are effective only if Iran is a state sponsor of terror as defined under section 2 of the divestment from terror act, 2008 PA 234, MCL 129.292.

Enacting section 1. This act takes effect April 1, 2013.

Governor

This act is ordered to take immediate effect.

Approved

Carol Morery Viventi

Secretary of the Senate

Sany Eralal

Clerk of the House of Representatives

VENDOR CERTIFICATION THAT IT IS NOT AN

"IRAN LINKED BUSINESS"

Pursuant to Michigan law, (the Iran Economic Sanctions Act, 2012 PA 517, MCL 129.311 et seq.), before accepting any bid or proposal, or entering into any contract for goods or services with any prospective Vendor, the Vendor must first certify that it is not an "IRAN LINKED BUSINESS, as defined by law.

Variable	
Vendor	
Legal Name	
Street Address	
City	
State, Zip	
Corporate I.D. Number / State	
Taxpayer I.D. #	
knowledge of the required seq. and 3) the full and co Vendor, by his/her signat BUSINESS" as required l	full knowledge of all of Vendors business activities, 2) full ments and possible penalties under the law MCL 129.311 et omplete authority to make this certification on behalf of the ure below, certifies that: the Vendor is NOT an "IRAN LINKED by MCL 129.311 et seq., and as such that Vendor is legally ad be considered for a possible contract to supply goods and/or the Detroit River.
Signature of Vendor's Authorized Agent:	
Printed Name of Vendor's Authorized Agent:	5
Witness Signature:	
Printed Name of Witness	

BID FORM

TABLE OF ARTICLES

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ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

The City of Northville 215 W. Main Street Northville, MI 48167

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

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 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

- 3.01 In submitting this Bid, Bidder represents that:
 - A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.	Addendum Date

- B. Bidder has visited the Site 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. Bidder is familiar with and is satisfied as to all federal, state and local 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 contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions, and (2) reports and drawings of Hazardous Environmental Conditions, if any, that have been identified in the Supplementary Conditions.
- E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with 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 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 of the Work for which this Bid is submitted.
- J. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 – FURTHER REPRESENTATIONS

- 4.01 Bidder further represents that:
 - A. this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any 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 sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.
 - E. Proposals submitted by Bidders who have been debarred, suspended, or made ineligible by any federal agency will be rejected.

ARTICLE 5 - BASIS OF BID

5.01 The undersigned, having familiarized himself with the local conditions affecting the cost of the work and with the Contract Documents for the designated project, hereby proposes to perform all work and furnish all labor, tools, equipment, and materials, including utility and transportation services, necessary to perform and complete in a workmanlike manner the construction itemized below, all in accordance with the Drawings, Specifications and other Contract Documents at the unit prices hereinafter set forth. There is a Minority (MBE) Contractor's participation grant requirement of 10% and a Women (WBE) Contractor's participation grant requirement of 7.5% for the project.

Item	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Mobilization	LS	1		
2	Site Preparation	LS	1		
3	Audio Visual Recording	LS	1		
4	Construction Staking	LS	1		
5	Traffic Control	LS	1		
6	Soil Erosion and Sedimentation Control	LS	1		
7	Water Control	LS	1		
8	Tree Removal 6-12" DBH	EA	15		
9	Tree Removal >12" DBH	EA	4		
10	Bat Habitat Felling	LS	1		
11	Clearing	AC	0.4		
12	Access Route	LS	1		
13	Pond Access	LS	1		
14	Concrete Wall Removal	LF	1130		
15	Woody Debris Removal	LS	1		
16	Outlet Rubble Removal	TON S	10		
17	Chain Link Fence Removal	LS	1		
18	Baseball Diamond Relocation	LS	1		
19	Dewatering Containment Area	LS	1		
20	Johnson Creek Grading/Excavation	CY	3140		
21	Vegetated Mechanically- Stabilized Earth (VMSE)	LF	840		
22	Rock Vanes	EA	4		
23	Fish Hatchery Pond Dredging	CY	3560		
24	Sheet Pile	LF	397		
25	Void Filling	CY	10		
26	Sheet Pile to Concrete Connection	LS	1		
27	Pond Outlet Structure	LS	1		
28	Handrail	LF	190		
29	Step Pools	LF	90		
30	4-8" Stone (Pedestrian Bridge)	CY	20		
31	Sediment Capture Area	SF	1630		
32	Live Stakes	EA	1040		
33	Emergent Plantings	EA	1680		
34	Shrubs	EA	332		
35	Trees: 2.5"	EA	35		
36	Trees: 1 gal.	EA	71		
37	Native Seed	AC	0.7		
38	Turf Seed	AC	0.8		
39	Topsoil	CY	835		
40	Erosion Control Blanket: C125BN	SY	2540		
41	Erosion Control Blanket: S75BN	SY	670		

42	Parking Lot Restoration	LS	1			
43	Site Restoration	LS	1			
44	As-Built Survey and Drawings	LS	1			
45	Vegetation Maintenance	MO	7			
	Allowances					
46	Permanent Signage	EA	2			
47	Unforeseen Site Conditions	LS	1			

Total Base Bid:	\$	
	(figures)	
	· ·	
	(words)	

By signing and submitting, the undersigned has read and agreed to the provisions in the contract documents and the additional highlighted requirements below.

SCHEDULE

The undersigned will achieve substantial completion of this Contract no later than November 15, 2020.

Substantial Completion shall be defined as all project work activities, with the exception of Live Stake Installation, Site Restoration, As-built Survey and Drawings, Continuation of Vegetation Maintenance, Vegetation Warranty, guarantees and contract close out.

The undersigned will achieve final completion of this Contract within 90 calendar days after substantial completion.

Final Completion shall include Live Stake Installation, Site Restoration, As-Built Survey and Drawings, and close out documents. Vegetation Maintenance and warranty shall extend beyond this period in order to fulfill the Contract requirements.

ACKNOWLEDGEMENT OF RIVER SYSTEM AND FLOODPLAIN

The Contractor understands and acknowledges that the performance of the work is required to be performed within a river system and floodplain. The Contractor further acknowledges that it is an active flowing river and the floodplain area may, from time to time, become wet and/or underwater during the performance of the work, and such accumulation of water shall not form the basis for additional compensation.

QUALIFICATIONS AND APPROACH

A description of the Bidder's qualifications has been included with this bid and includes:

- Bidder's overall qualifications (1 page max);
- A description of the Bidder's experience, with 3 project examples that are similar or contain similar components to the proposed project (2 pages max); and
- A description of the Bidder's general planned approach for this project with tentative schedule (4 pages max + schedule).

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete on or before **November 15, 2020**, and will be completed and ready for final payment, less retainage, in accordance with Paragraph 14.07.B of the General Conditions on or

before <u>February 15, 2021</u>. This project is funded by the Environmental Protection Agency through a Great Lake Restoration Initiative Grant.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times.

ARTICLE 7 – CONTRACT DOCUMENTS

7.01 Bidder acknowledges that his bid is based on the Contract Documents dated March 2020.

ARTICLE 8 - FAMILIARITY WITH THE SITE

8.01 The undersigned certifies that he has visited the project site prior to bidding to become familiar with and satisfy as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

ARTICLE 9 – ACKNOWLEDGEMENT OF RIVER SYSTEM, FLOODPLAIN AND VARIABLE WATER LEVELS

9.01 The Contractor understands and acknowledges that the performance of the work is required within the Rouge River system and floodplain and that the Rouge River water level fluctuates. The Contractor understands and acknowledges that they have taken into account the potential for any water level changes that might occur in costing, scheduling, and feasibility of performing the contract work under the prevailing environmental conditions. Therefore, the Contractor acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project is likely and does not constitute a change in conditions or an unforeseen site condition.

The Contractor shall be fully aware of the Rouge River hydrology and current weather conditions so that work in progress can be secured and protected at all times, so that safe job site working conditions are maintained, and so that soil erosion is controlled in accordance with all applicable permits and environmental laws.

The Contractor acknowledges that delays in the start of, or completion of, work due to fluctuations in the water level throughout the duration of the project shall not constitute a change in conditions nor shall be a basis for any extension of time or damages. If the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reasons of changing water levels, storms, inundation or floods, the Contractor shall have no valid claim for damages, but shall in such case be entitled to an extension of time as the Engineer shall adjudge to be just and reasonable, provided that formal claim for an extension of time is made in writing by the Contractor within one week of the alleged delay.

The Engineer reserves the right to suspend work activities when it is in the best interest of the project to do so due to weather, flow, or water level conditions. The directive to suspend work activities shall be submitted to the Contractor in writing with justification. Such suspension shall not be basis for claim for additional cost but can be basis for extension of time.

ARTICLE 10 - ATTACHMENTS TO THIS BID

10.01	The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of _____

ARTICLE 11 – DEFINED TERMS

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

ARTICLE 12 - BID SUBMITTAL 12.01 This Bid submitted by: If Bidder is: An Individual Name (typed or printed): (Individual's signature) A Partnership Partnership Name: ______ (SEAL) By: (Signature of general partner – attach evidence of authority to sign) Name (typed or printed): A Corporation Corporation Name: ______ (SEAL) State of Incorporation: Type (General Business, Professional, Service, Limited Liability): (Signature – attach evidence of authority to sign) Name (typed or printed): (CORPORATE SEAL) (Signature of Corporate Secretary) Date of Qualification to do business in _______[State Where Project is Located] is _______. A Joint Venture Name of Joint Venturer: First Joint Venturer Name: _____ (SEAL) (Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed):	
Title:	
Second Joint Venturer Name:	(SEAL)
Ву:	
(Signature of second joint venture partner – attach evidence of authority to sign)	
Name (typed or printed):	
Title:	
(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that i the joint venture should be in the manner indicated above.)	s a party to
Bidder's Business address:	
Phone: Facsimile:	
Submitted on, 20	
State Contractor License No (If applicable)	

BID BOND

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

SURETY (Name and Address of Principal Place of	of Business)	:	
OWNER (Name and Address):			
BID Bid Due Date: Project (Brief Description Including Location):			
BOND Bond Number: Date (Not later than Bid due date): Penal sum			
(Words))	(Figures)	
Surety and Bidder, intending to be legally bound he cause this Bid Bond to be duly executed on its beh		ect to the terms printed on the reverse side hereof, do athorized officer, agent, or representative.	each
BIDDER		SURETY	
BIDDER	(Seal	SURETY	(Seal)
BIDDER Bidder's Name and Corporate Seal	(Seal)	SURETY Surety's Name and Corporate Seal	(Seal)
	(Seal)		(Seal)
Bidder's Name and Corporate Seal By:	(Seal)	Surety's Name and Corporate Seal By: Signature and Title	(Seal)

EJCDC NO. C-430 (2002 Edition)

- 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 Surety's liability.
- 2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
- 3. This obligation shall be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
- 4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
- 5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
- 6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after 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.

Notice of Award

			Dated
Project:		Owner:	Owner's Contract No.:
Contract:		L	Engineer's Project No.:
Bidder:			
Bidder's Address	s: (send Certified Mail, Return Re	ceipt Requested)	
	e notified that your Bid care awarded a Contract		ontract has been considered. You are the Successful
	(Indi	cate total Work, alternates or se	ections or Work awarded.)
The Co	ntract Price of your Con	tract is	
Dolla	rs (\$).		
(Insert appr	opriate data if Unit Price	es are used. Change langua	ge for Cost-Plus contracts.)
0	copies of each of the pro	pposed Contract Documents	(except Drawings) accompany this Notice of Award.
	sets of the Drawings will	be delivered separately or	otherwise made available to you immediately.
You mu Award.	ust comply with the follo	wing conditions precedent	within [15] days of the date you receive this Notice of
1.	Deliver to the Owner [] fully executed count	erparts of the Contract Documents.
2.		s (Article 20), [and] Gene	the Contract security [Bonds] as specified in the al Conditions (Paragraph 5.01) [and Supplementary
3.	Other conditions prece	edent:	
		conditions within the time s are your Bid security forfeite	pecified will entitle Owner to consider you in default, d.
	ten days after you co of the Contract Docume		itions, Owner will return to you one fully executed
		Owner	
		By:Authorized Signature	
		Title	

Copy to Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

City of Northville and Alliance of Rouge Communities

("Owner") and

THIS AGREEMENT is by and between

	("Contractor").	
Owner	and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:	
ARTI	CLE 1 – WORK	
1.01	Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:	
	All work necessary to perform habitat restoration at Johnson Creek at Fish Hatchery Park as presented in the Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project Contract Documents.	
ARTI	CLE 2 – THE PROJECT	
2.01	The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:	
	Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project as presented in the Contract Documents	
ARTI	CLE 3 – ENGINEER	
3.01	The Project has been designed by Environmental Consulting & Technology, Inc. (ECT) (Engineer), who is to a as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.	
ARTI	CLE 4 – CONTRACT TIMES	
4.01	Time of the Essence	
	A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.	
4.02	Days to Achieve Substantial Completion and Final Payment	
	A. The Work will be substantially completed within days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within days after the date when the Contract Times commence to run.	

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. 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), Contractor shall pay Owner \$400 for each day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$400 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to below:
 - A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

- 6.01 Submittal and Processing of Payments
 - A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.
- 6.02 Progress Payments; Retainage
 - A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below, after federal funds have been deposited. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of 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 in the General Requirements:
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:
 - a. 95 percent of Work completed (with the balance being retainage); and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
 - 2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.
- 6.03 Final Payment
 - A. Upon receipt of the final Application for Payment accompanied by Engineer's recommendation of payment in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay Contractor as provided in Paragraph 14.07 of the General Conditions the remainder of the Contract Price as recommended by Engineer as

provided in said Paragraph 14.07, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum legal rate.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. Contractor has visited the Site 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 federal, state, and local 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 contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions.
 - E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.
 - F. Contractor does not consider that any 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 Documents.
 - 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 correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
 - 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.
 - J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01

Coi	ıtent	'S			
A.	The Contract Documents consist of the following:				
	1.	This Agreement (pages 1 to 6, inclusive).			
	2.	Performance bond (pages <u>00610-1</u> to <u>00610-2</u> , inclusive).).			
	3.	Payment bond (pages <u>00615-1</u> to <u>00615-2</u> , inclusive).			
	4.	Other bonds (pages to, inclusive).			
		a (pages to, inclusive).			
		b (pages to, inclusive).			
		c (pages to, inclusive).			
	5.	General Conditions (pages <u>00710-1</u> to <u>00710-62</u> , inclusive).			
	6.	Supplementary Conditions (pages <u>00800-1</u> to <u>00800-4</u> , inclusive).			
	7.	Specifications as listed in the table of contents of the Project Manual.			
	8.	Drawings consisting of <u>19</u> sheets with each sheet bearing the following general title: <u>Rouge River AOC</u> <u>Johnson Creek Fish Hatchery Park Habitat Restoration Project.</u>			
	9.	Addenda (numbers to, inclusive).			
	10. Exhibits to this Agreement (enumerated as follows):				
		a. Contractor's Bid (pages <u>00410-1</u> to <u>00410-7</u> , inclusive).			
		b. Documentation submitted by Contractor prior to Notice of Award (pages to, inclusive).			
		c			
	11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are nattached hereto:				
		a. Notice to Proceed (pages <u>1</u> to <u>1</u> , inclusive).			
		b. Work Change Directives.			
		c. Change Order(s).			
B.		e documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise eve).			
C.	There are no Contract Documents other than those listed above in this Article 9.				
D.	The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.				

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 Assignment of Contract

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

10.03 Successors and Assigns

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

10.04 Severability

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

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in four copies. One counterpart each has been delivered to Owner, Contractor, and Engineer. All portions of the Contract Documents have been signed, initialed, or identified by Owner and Contractor or identified by Engineer on their behalf.

This Agreement is dated	
CITY OF NORTHVILLE:	CONTRACTOR
By:	
Title:	Title:
[CORPORATE SEAL]	[CORPORATE SEAL]
Attest:	Attest:
Title:	Title:
Address for giving notices:	Address for giving notices:
ALLIANCE OF ROUGE COMMUNITIES:	
By:	
Title:	
[CORPORATE SEAL]	
Attest:	
Title:	
Address for giving notices:	

PERFORMANCE BOND

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

CONTRACTOR (Name and Address):	SURETY (Name and Address of Principal Place of Business):	:
OWNER (Name and Address):		
CONTRACT Date: Amount: Description (Name and Location):		
BOND Bond Number: Date (Not earlier than Contract Date): Amount: Modifications to this Bond Form:		
Surety and Contractor, intending to be legally bound hereby, Performance Bond to be duly executed on its behalf by its au	subject to the terms printed on the reverse side hereof, do each thorized officer, agent, or representative.	cause thi
CONTRACTOR AS PRINCIPAL Company:	SURETY	
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal	_ (Seal)
(Space is provided below for signatures of additional	By: Signature and Title (Attach Power of Attorney)	_
parties, if required.)		
	Attest: Signature and Title	_
CONTRACTOR AS PRINCIPAL Company:	SURETY	
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal	_ (Seal)
	By: Signature and Title (Attach Power of Attorney)	_
	Attest: Signature and Title:	_

EJCDC No. C-610 (2002 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

- 1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.
- 2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.
- 3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and
 - 3.3. Owner has agreed to pay the Balance of the Contract Price to:
 - 1. Surety in accordance with the terms of the Contract;
 - Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.
- 4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:
 - 4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
 - After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 - 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
- 5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

- 6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:
 - 6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;
 - 6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and
 - 6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or nonperformance of Contractor.
- 7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the 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 Owner or its heirs, executors, administrators, or successors.
- 8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.
- 9. 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 Contractor Default or within two years after Contractor ceased working or within two years after 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 period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- 10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.
- 11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

- 12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
- 12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone Surety Agency or Broker Owner's Representative (engineer or other party)

PAYMENT BOND

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

CONTRACTOR (Name and Address):	SURETY (Name and Address of Principal Place of Business):
OWNER (Name and Address):	
CONTRACT Date: Amount: Description (Name and Location):	
BOND Bond Number: Date (Not earlier than Contract Date): Amount: Modifications to this Bond Form:	
Surety and Contractor, intending to be legally bound hereby, a Payment Bond to be duly executed on its behalf by its authoric	subject to the terms printed on the reverse side hereof, do each cause this zed officer, agent, or representative.
CONTRACTOR AS PRINCIPAL Company:	SURETY
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal (Seal)
(Space is provided below for signatures of additional	By: Signature and Title (Attach Power of Attorney)
parties, if required.)	Attest: Signature and Title
CONTRACTOR AS PRINCIPAL Company:	SURETY
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal (Seal)
	By: Signature and Title (Attach Power of Attorney)
	Attest: Signature and Title:

EJCDC No. C-615 (2002 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

- 1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
- 2. With respect to Owner, this obligation shall be null and void if Contractor:
 - Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
- 3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
- 4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have a direct contract with Contractor:
 - Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 - Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 - 3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
- 5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
- 6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:
 - 6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
- 7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

- 8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.
- 9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
- 10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.
- 11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, 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.
- 12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
- 13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.
- 14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

- 15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and 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.
- 15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone Surety Agency or Broker:
Owner's Representative (engineer or other party):

Notice to Proceed

		Dated
Project:	Owner:	Owner's Contract No.:
Contract:		Engineer's Project No.:
Contractor:		
Contractor's Address: [send Certified Mail, Return Receipt Reque	ested]	
before that date, you are to start perform Article 4 of the Agreement, the date of Start [(or) the number of days to achieve readiness for final payment is]. Before you may start any Work	ming your obligations un ubstantial Completion is_tieve Substantial Completion at the Site, Paragraph 2.01 ith copies to Engineer and ase and maintain in according	
	Given by:	
		Authorized Signature
		Title
		Date
Copy to Engineer		

EJCDC No. C-550 (2002 Edition)
Prepared by the Engineers' Joint Contract Documents Committee and endorsed by the
Associated General Contractors of America and the Construction Specifications Institute.

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PR	ESENTS, That we	
KNOW ALL MEN BY THESE PR of	, hereir	nafter called the Principal, and
hereinafter called the Surety, are held and fir sum of	•	•
Dollars (\$) to the pay	ment whereof, well and truly to	be made, we bind ourselves,
our heirs, executors, administrators, successor	ors and assigns, jointly and sever	ally, firmly by these presents.
Sealed with our seals and dated this	day of	, A.D., 20
WHEREAS, The above named Prindated the day of Principal has covenanted and agreed as follo	cipal has entered into a contract	with the
dated the day of	, A.D.,	, 20 wherein said
To furnish all the labor and material	ws, to-wit.	
NOW, THEREFORE, The condition the Principal to any Subcontractor or by It payable of all indebtedness which may arise furnishing materials or supplies or any Subcolabor performed or materials or supplies furnishall be void; otherwise, the same shall be in AND PROVIDED, That any alternate work to be done under it, or the giving by time for the performance of said contract, or shall not in any way release the Principal administrators, successors or assigns from alternation, extension, or forbearance being her	nim or any Subcontractor as the se from him to a Subcontractor ontractor to any person, firm, or nished in the performance of sair full force and effect. The sions which may be made in the step the party of the first part to said any other forbearance on the pull and the Surety, or either of any liability hereunder, notice	the same may become due and are or party performing labor or account of any and contract, then this obligation with the said contract, or in the discontract, of any extension of part of either party to the other, at them, their heirs, executors,
	Princ	
	Sure	tv
Signed, Sealed and Delivered in the Presence of:	Suice	.,

MAINTENANCE & GUARANTEE BOND

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

CONTRACTOR (Name and Address):	SURETY (Name and Address of Principal Place of Business):	
OWNER (Name and Address):		
CONTRACT Date: Amount: Description (Name and Location):		
BOND Bond Number: Date (Not earlier than Contract Date): Amount: Modifications to this Bond Form:		
	subject to the terms printed on the reverse side hereof, do each d on its behalf by its authorized officer, agent, or representative.	
CONTRACTOR AS PRINCIPAL Company:	SURETY	
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal	(Seal)
(Space is provided below for signatures of additional	By: Signature and Title (Attach Power of Attorney)	
parties, if required.)	Attest:Signature and Title	
CONTRACTOR AS PRINCIPAL Company:	SURETY	
Signature: (Seal) Name and Title:	Surety's Name and Corporate Seal	(Seal)
	By: Signature and Title (Attach Power of Attorney)	
	Attest: Signature and Title:	

3/20/20

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that by and under said contract, the above named principal has agreed with the said Owner that for a period of two years from the date of payment of Final Estimate, to keep in good order and repair any defect in all the work done under said contract either by the principal or his subcontractors, or his material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections, shall also be made good all without expense to the Owner, excepting only such part or parts of said work as may have been disturbed without the consent or approval of the principal after the final acceptance of the work, and that whenever directed so to do by the Owner, by notice serving in writing, either personally or by mail, on the principal at
ORits
legal representatives, or successors, or on the surety at
WILL PROCEED at once to make such repairs as directed by said Owner; and in case of failure to do so within one week from the date of such notice, or within reasonable time not less than one week, as shall be fixed in said notice, then the said Owner shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and make such repairs, and charge the expense thereof to, and receive same from said principal or surety. If any repair is necessary to be made at once to protect life and property, then and in that case, the said Owner may take immediate steps to repair or barricade such defects without notice to the contractor. In such accounting the said Owner shall not be held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actually paid therefore shall be charged to the principal or surety. In this connection the judgment of said year from the date of payment of Final Estimate, shall keep said work so constructed under said contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said principal after the final acceptance of the same, proceed to make repair as in said notice directed, or shall reimburse said Owner for any expense incurred by making such repairs, should the principal or surety fail to do so as hereinbefore specified, and shall fully indemnify, defend and save harmless the said Owner from all suits and actions for party or parties, by or from any of the acts or omissions or through the negligence of said principal, servants, agents, or employees, in the prosecution of the work included in said contract, and from any and all claims arising under Workman's Compensation Act, so-called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

FOR INFORMATION ONLY – Name, Address and Telephone

Surety Agency or Broker Owner's Representative (engineer or other party)

Contractor's Application For Payment No. ___ Application Period: 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** 1. ORIGINAL CONTRACT PRICE......\$ Approved Change Orders 2. Net change by Change Orders \$ Number Additions **Deductions** 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)......\$ **TOTALS** 7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application) \$ 8. AMOUNT DUE THIS APPLICATION......\$ **NET CHANGE BY** 9. BALANCE TO FINISH. PLUS RETAINAGE CHANGE ORDERS (Column G on Progress Estimate + Line 5 above)\$ **CONTRACTOR'S CERTIFICATION** The undersigned Contractor certifies that: (1) all previous progress payments received Payment of: from Owner on account of Work done under the Contract have been applied on (Line 8 or other - attach explanation of other amount) 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 is recommended by: Application for Payment will pass to Owner at time of payment free and clear of all (Engineer) (Date) 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 Payment of: encumbrances); and (3) all Work covered by this Application for Payment is in (Line 8 or other - attach explanation of other amount) accordance with the Contract Documents and is not defective. is approved by: (Owner) (Date)

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Page 1 of 3

Funding Agency (if applicable)

(Date)

Approved by:

Date:

By:

Progress Estimate

Contractor's Application

For (contract):	or (contract): Application Number:							
Application Period	:		Application Date:					
	А	В	Work Comp	pleted	E	F		G
Specification Section No.	Item Description	Scheduled Value	C From Previous Application (C + D)	D This Period	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (<u>F</u>) B	Balance to Finish (B - F)
_								
	Totals							

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Progress Estimate

Contractor's Application

For (contract):	or (contract): Application Number:									
Application Period	Application Period: Application Date:									
	А			В	С	D	E	F		G
Bid Item No.	<u>Item</u> Description	Bid Quantity	Unit Price	Bid Value	Estimated Quantity Installed	Value	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (<u>F</u>) B	Balance to Finish (B - F)
	Totals									

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Stored Material Summary

Contractor's Application

For (contract	For (contract):			Application Number:					
Application Period:			Application Date:						
Α	В	С	D	П р			F		G
	Shop Drawing	-	Stored Previo	ously		nis Month	Incorporated	in Work	
Invoice No.	Transmittal No.	Materials Description	Date (Month/Year)	Amount (\$)	Amount (\$)	Subtotal	Date (Month/Year)	Amount (\$)	Materials Remaining in Storage (\$) (D + E - F)
		Totals							

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MBE/WBE Reporting

The CONTRACTOR to comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises contained in 40 CFR, Part 33. The CONTRACTOR shall agree to meet the following MBE/WBE fair share objectives/goals:

MBE: 10% WBE: 7.5%

Bidders must follow, document, and maintain documentation of the Good Faith Efforts, to ensure that Disadvantage Business Enterprises (DBE) have the opportunity to participate in the project by increasing awareness of procurement efforts and outreach as instructed in the grant award attached.

CONTRACTOR to complete and submit this form with each application for payment.

Pay Application:	Date:

Good Faith Efforts

Company Name	MBE	WBE	Effort Made

Work Secured

Company Name	MBE	WBE	Amount to-date	Projected Future Amount

Change Order

No. _____

Date of Issuance:		Effectiv	e Date:
Project:	Owner:		Owner's Contract No.:
Contract:			Date of Contract:
Contractor:			Engineer's Project No.:
The Contract Documents are modified	l as follows upo	on execution of this Chang	e Order:
Description:			
Attack and the Attack			
Attachments: (List documents supporting	g cnange):		
CHANGE IN CONTRACT PR Original Contract Price:	RICE:	• •	GE IN CONTRACT TIMES: Working days Calendar days
onginal community moor		_	days or date):
\$		Ready for final payment	(days or date):
[Increase] [Decrease] from previously ap	proved Change	[Increase] [Decrease] from	previously approved Change Orders
Orders No to No	:	No to No	:
\$			days):(days):
Ψ		rtoddy for iniai paymoni	(dayo).
Contract Price prior to this Change Order	r:	Contract Times prior to this	-
\$			days or date):(days or date):
\$		Ready for fillar payment	(days or date).
[Increase] [Decrease] of this Change Ord	der:	[Increase] [Decrease] of th	s Change Order:
•		Substantial completion (
\$	<u></u>	Ready for final payment	(days or date):
Contract Price incorporating this Change	Order:	Contract Times with all app	_
\$			days or date):(days or date):
4		rioddy for imar paymoni	(days or date).
RECOMMENDED:	ACCEPTED:		ACCEPTED:
By:	Bv.		By:
Engineer (Authorized Signature)		er (Authorized Signature)	Contractor (Authorized Signature)
Date:	Date:		Date:
Approved by Funding Agency (if applicable):			Date:
reproved by Funding rigerity (II applicable).			

Change Order Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

Certificate of Substantial Completion

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:
This [tentative] [definitive] (Certificate of Substantial Completion apartract Documents:	pplies to: The following specified portions:
		Date of Substantial Completion
and found to be substantially	complete. The Date of Substantial Com	thorized representatives of Owner, Contractor and Engineer, appletion of the Project or portion thereof designated above is a warranties required by the Contract Documents, except as
	nclude any items on such list does not alte	ed or corrected, is attached hereto. This list may not be all- er the responsibility of the Contractor to complete all Work in
	hall be as provided in the Contract Doc	security, operation, safety, maintenance, heat, utilities, cuments except as amended as follows: Not Amended
Owner's Amended Responsib	oilities:	
Contractor's Amended Respo	nsibilities:	
The following documents are	attached to and made part of this Certifica	ate:
	stitute an acceptance of Work not in accorpplete the Work in accordance with the Co	rdance with the Contract Documents nor is it a release of ontract Documents.
	Executed by Engineer	Date
	Accepted by Contractor	Date
	Accepted by Owner	Date

EJCDC No. C-625 (2002 Edition)
Prepared by the Engineers' Joint Contract Documents Committee and endorsed by the
Associated General Contractors of America and the Construction Specifications Institute.

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

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by









AMERICAN COUNCIL OF ENGINEERING COMPANIES
ASSOCIATED GENERAL CONTRACTORS OF AMERICA
AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE

A Practice Division of the

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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American Society of Civil Engineers 1801 Alexander Bell Drive, Reston, VA 20191-4400 (800) 548-2723 www.asce.org

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 - 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. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 - 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 - 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 - 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 - 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 - 9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
 - 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 - 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

- 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
- 13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
- 14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
- 15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
- 16. Cost of the Work—See Paragraph 11.01 for definition.
- 17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
- 18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 19. *Engineer*—The individual or entity named as such in the Agreement.
- 20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
- 21. General Requirements—Sections of Division 1 of the Specifications.
- 22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
- 23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 24. Laws and Regulations; Laws or Regulations—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

- 27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
- 28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
- 29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
- 30. *PCBs*—Polychlorinated biphenyls.
- 31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
- 32. *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.
- 33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
- 34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
- 35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
- 36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
- 37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 38. Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
- 39. *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.

- 40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- 41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
- 42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
- 43. *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 at the Site.
- 44. 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.
- 45. Successful Bidder—The Bidder submitting a responsive Bid to whom Owner makes an award.
- 46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
- 47. *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 Subcontractor.
- 48. *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 those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- 49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
- 50. 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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
- 51. Work Change Directive—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

- A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 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 14.04 or 14.05).

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. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- 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. 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 Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.
- 2.03 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 Agreement 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 Agreement. 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 Agreement, whichever date is earlier.

2.04 *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 the date on which the Contract Times commence to run.

2.05 Before Starting Construction

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
 - 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.

2.06 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *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 2.05.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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, 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, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, 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 Contract Documents. 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 Contract Documents.

A. Reporting Discrepancies:

- 1. Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
- 2. Contractor's Review of Contract Documents During Performance of Work: If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
- 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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

- 1. A Field Order;
- 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
- 3. Engineer's written interpretation or clarification.

3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier 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.
- 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.

3.06 Electronic Data

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- 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 the Work is to be performed 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.

4.02 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 contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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:
 - 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.

4.03 Differing Subsurface or Physical Conditions

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed 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 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.
- C. Possible Price and Times Adjustments:
 - 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and
 - 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 Paragraphs 9.07 and 11.03.
 - 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

- contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
- c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
- 3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous 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 shall not be responsible for 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 such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated:

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

- consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- 2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 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.

4.06 Hazardous Environmental Condition at Site

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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:
 - 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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

- 5.01 Performance, Payment, and Other Bonds
 - A. Contractor shall furnish performance and payment bonds, 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 Documents. 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 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
 - B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 each bond.
 - C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, 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 requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 Contractor's Insurance

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which 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:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
- b. by any other person for any other reason;
- 5. 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; and
- 6. 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.
- B. The policies of insurance required by this Paragraph 5.04 shall:
 - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and 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;
 - include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 - 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 - 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 - 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 - 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 Owner's Liability Insurance

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, 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.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full 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:
 - include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 - 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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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.
 - 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 - 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 - 5. allow for partial utilization of the Work by Owner;
 - 6. include testing and startup; and
 - 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

- members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies 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 of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.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, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 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. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- 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.

6.02 *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. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 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.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, 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.

6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "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 specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. "Or-Equal" Items: If in Engineer's sole discretion 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, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, 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; and
- 3) it has a proven record of performance and availability of responsive service.
- 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.

2. Substitute Items:

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. 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:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;

2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
- b) 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

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.
- 6.06 Concerning Subcontractors, Suppliers, and Others
 - A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

- required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. 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 any right of Owner or Engineer to reject defective Work.
- C. 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. 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
 - shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. 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.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 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.

6.08 Permits

A. Unless otherwise provided in the Supplementary Conditions, 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 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 knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas:

- Contractor shall confine construction equipment, the storage of materials and equipment, and
 the operations of workers to the Site and other areas permitted by Laws and Regulations, and
 shall not unreasonably encumber the Site and other areas with construction equipment or
 other materials or equipment. Contractor shall assume full responsibility for any damage to
 any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas
 resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- 3. 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 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 by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other 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 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 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 property to stresses or pressures that will endanger it.

6.12 Record Documents

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

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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, 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 owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- 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 6.13.A.2 or 6.13.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 (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 for protection of the Work 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 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 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.

6.15 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.

6.16 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.

6.17 Shop Drawings and Samples

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- 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 6.17.D.

2. Samples:

- a. Submit number of Samples specified in the Specifications.
- b. 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 6.17.D.
- B. 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. Submittal Procedures:

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each 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 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 and approval of that 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 both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

- 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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- 3. Engineer's review and approval 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 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

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.

6.18 Continuing the Work

A. 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, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 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 representation of 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 or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. 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 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 6.20.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 6.20.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.

6.21 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 law.
- 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, Shop Drawings 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 6.21, 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 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.

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

7.03 Legal Relationships

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

- 8.01 Communications to Contractor
 - A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.
- 8.02 Replacement of Engineer
 - A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.
- 8.03 Furnish Data
 - A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 8.04 Pay When Due
 - A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.
- 8.05 Lands and Easements; Reports and Tests
 - A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 8.06 Insurance
 - A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

- 8.07 *Change Orders*
 - A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.
- 8.08 Inspections, Tests, and Approvals
 - A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.
- 8.09 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.
- 8.10 Undisclosed Hazardous Environmental Condition
 - A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.
- 8.11 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.
- 8.12 Compliance with Safety Program
 - 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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

- 9.01 *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 Documents.
- 9.02 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 9.09. 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.

9.03 Project Representative

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. 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.

9.04 Authorized Variations in Work

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

- 9.06 Shop Drawings, Change Orders and Payments
 - A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
 - B. In connection with 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, see Paragraph 6.21.
 - C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
 - D. In connection with Engineer's authority as to Applications for Payment, see Article 14.
- 9.07 Determinations for Unit Price Work
 - A. 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 Paragraph 10.05.
- 9.08 Decisions on Requirements of Contract Documents and Acceptability of Work
 - A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
 - B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
 - C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
 - D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.
- 9.09 Limitations on Engineer's Authority and Responsibilities
 - A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 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; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

- A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 - 1. deny the Claim in whole or in part;
 - 2. approve the Claim; or
 - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. Costs Included: The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs 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 11.01.B, 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, 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 11.01.
- 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 5.06.D), 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.
- B. 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, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which 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 Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work 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 or when a Claim for an 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 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, 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.

11.02 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:

- 1. Contractor agrees that:
 - a. 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
 - b. 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:

- 1. 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.

11.03 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 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; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - Contractor believes that Contractor 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 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

- C. Contractor's Fee: 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - 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 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

- neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 Price or the Contract Times, or both. 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.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is 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 described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests 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.

13.03 Tests and Inspections

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.

- C. If it is found that the uncovered Work is defective, 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 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, 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.

13.06 Correction or Removal of Defective Work

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. 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 removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 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 land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

- 1. repair such defective land or areas; or
- 2. correct such defective Work: or
- 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 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. 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) will be paid by Contractor.
- 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 13.07, 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 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

- 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 in accordance with Paragraph 13.06.A, 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, 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 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A 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.

14.02 Progress Payments

A. *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 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.

B. Review of Applications:

- 1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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 moneys 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - 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;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
- 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 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. 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 tentative list.

14.05 Partial Utilization

- 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:
 - Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04. A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
- 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. 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 14.09. 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. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 Final Completion Delayed

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A. The making and acceptance of final payment will constitute:

- a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
- a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 - 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's repeated disregard of the authority of Engineer; or
 - 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. 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
 - 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 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):
 - 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;
 - 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;
 - 3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) 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 15.03.

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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 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 to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
- 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents 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.

17.03 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 Documents. 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.

17.04 Survival of Obligations

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

17.05 Controlling Law

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

17.06 Headings

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

SECTION 00800

SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

PART I - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2007 edition) 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.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01.A.12

Delete Paragraph 1.01.A.12 in its entirety and replace with the following:

12. Contract Documents – The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), Bidding Documents, Notice to Proceed, the Payment, Performance, and Maintenance Bond, warranties/guarantees, these General Conditions, the Supplementary Conditions, the Specifications, and the Drawings as the same are more specifically identified in the Agreement, together with all written amendments, Change Orders, Work Change Directives, Field Orders, and Engineer's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings, other Contractor submittals and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this Paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by Owner to Contractor are not Contract Documents.

SC-1.01.A.29

Add the following sentence to Paragraph 1.01.A.29

The Owner is the City of Northville and the Alliance of Rouge Communities. Any references to Owner in the Contract Documents, including the General Conditions and Supplementary Conditions shall be defined as City of Northville and the Alliance of Rouge Communities.

SC-1.01.A.52 thru 64.

Add the following new definitions after Paragraph 1.01.A.51:

- 52. Bid Security The security designated in the Bidding Documents to be furnished by the Bidder as a guaranty of good faith to enter into a Contract for the Work contemplated if it is awarded to Bidder.
- 53. Excusable Delay Any delay beyond the control and without the fault or negligence of the Contractor, the Owner, or any other contractor caused by events or circumstances such as, but not limited to, acts of God or of the public enemy, acts of interveners, acts of government other than the Owner, fires, floods, epidemics, quarantine restrictions, freight embargoes, and hurricanes, tornadoes, or new sink holes. Labor disputes and above average rainfall shall give rise only to inexcusable delays.

- 54. Hold Point A point in the construction sequence when the construction Contractor is required to stop work on that portion of the project until an inspection has been completed.
- 55. Maintenance Bond The bond executed by Contractor and its Surety, upon forms provided by the Owner, guaranteeing the Work was completed in accordance with the Contract Documents and obligating the protection of Owner against any defect and the correction of any defect resulting from faulty materials, equipment, or workmanship, without expense to the Owner.
- 56. Non-Conformance Report A report written by the Engineer to document the Contractor's procedure or Work that does not meet requirements of the Specifications or Contract.
- 57. Nonprejudicial Delay Any delay impacting a portion of the Work within the available total float or slack time, and not necessarily preventing completion of the Work within the Contract Time.
- 58. Payment Bond The bond executed by Contractor and its Surety, upon forms provided by Owner, guaranteeing the payment of all labor and material claims in connection with the Work as provided by law.
- 59. Performance Bond The bond executed by Contractor and its Surety, upon forms provided by the Owner, guaranteeing performance of the Work in accordance with the intent of the Drawings and Specifications and the terms of the Contract as provided by law.
- 60. Performance Specifications Specifications that require the manufacturer or supplier of equipment, materials, or systems to design, manufacture, deliver, and install products to achieve specific results under stipulated conditions of operation and in environments described in applicable Specifications sections.
- 61. Prejudicial Delay Any excusable or compensable delay impacting the Work and exceeding the total float available in the progress schedule, thus preventing completion of the Work within the Contract Times unless the Work is accelerated.
- 62. Preoperational Testing All field inspections, installation checks, water tests, performance tests, and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract Documents for their intended purposes.
- 63. Start-Up Testing A predefined trial period required for achieving substantial completion during which Contractor is to operate the entire Work (or any part thereof agreed to by the Owner) under actual and simulated operating conditions for the purpose (i) of making such minor adjustments and changes to the Work as may be necessary for the Work to comply with the Contract Documents and (ii) to comply with the final test requirements in the Contract Documents.

SC-1.02.D.1.d

Add Paragraph 1.02.D.1.d, which is to read as follows:

d. has been completed with an unresolved non-conformance report.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01.A

Delete Paragraph 2.01.A in its entirety and replace with the following:

A. Within the time specified in the Notice of Award, Contractor shall provide the Owner with the number of original sets of separate Payment, Performance, and Maintenance Bonds and with the number of original sets of Certificates of Insurance meeting the standards found in the Supplementary Conditions, as specified in the Notice of Award. Insurance companies and insurance forms must be standard to the industry and acceptable to the Owner. Failure to submit bonds and/or insurance within the specified time frame will be considered a default and a failure to perform as required by the Bid Bond, which will become the Owner's property.

SC-2.01.B

Delete Paragraph 2.01.B in its entirety.

SC-2.02.A

In Paragraph 2.02.A, delete "ten" in the first line and replace with one. And add at the end of the sentence and one electronic copy of plans in PDF and AutoCad formats and one copy of the specifications in PDF format.

SC-2.03.A

Delete Paragraph 2.03.A in its entirety and insert the following in its place:

A. A Notice to Proceed may be given at any time within 90 days after the Effective Date of the Agreement. The Contract Time will commence at the time specified in such notice.

SC-2.05.A.2

Delete Paragraph 2.05.A.2 in its entirety and replace with the following:

a separate preliminary schedule of Shop Drawings and Sample Schedule of Submittals which will list each required submittal and the times for submitting, reviewing, and processing each submittal; the schedules specified in this Paragraph 2.05A.2 may be added to from time to time as determined by the Engineer; and

SC-2.07.A

Delete everything in Paragraph 2.07.A before the sentence starting "Contractor shall have an additional 10 days to make corrections. . ." and insert the following at the beginning:

All schedules are to be submitted prior to the preconstruction meeting.

SC-2.07.A.3

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project Delete Paragraph 2.07.A.3 in its entirety and replace with the following:

3. Contractor's Schedule of Values must be acceptable to the Engineer and provide a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01.D

Add a new Paragraph 3.01.D which is to read as follows:

D. Each and every provision of Laws and Regulations required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

SC-3.05.A.2

In Paragraph 3.05.A.2 delete everything after ". . . without written consent of Owner. . ."

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.01.B

Delete Paragraph 4.01.B in its entirety.

SC-4.02.A.1

Delete Paragraph 4.02.A.1 in its entirety and replace with the following:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents. Engineer has relied upon the data obtained from subsurface investigations made at the site in the form of hand boring and chemical analysis. Such data is in the form of field notes and lab reports, which are included in the appendix to the Project Manual. Such logs and samples are not part of the Contract Documents; and

SC-4.02.A.2.a

Add Paragraph 4.02.A.2.a, which is to read as follows:

a. In the preparation of Drawings and Specifications, the Engineer has relied upon certain reports, plans and tests of subsurface physical conditions at the Site. Copies of these reports or plans are included in the appendix to the Project Manual or the plan set. Such reports are not part of the Contract Documents

SC-4.05. A

In Paragraph 4.05.A, delete "engineering surveys" in the first line and replace with the base map in AutoCad format

SC-4.06.G

Delete Paragraph 4.06.G in its entirety

ARTICLE 5 - BONDS AND INSURANCE

SC-5.01

Delete Paragraph 5.01 in its entirety and replace with the following: 5.01 *Performance, Payment, Maintenance, and Other Bonds*

- A. Contractor shall furnish Performance, Payment, and Maintenance Bonds, 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 Documents. These bonds shall be furnished in accordance with and subject to the provision of 1963 PA 213, MCL § 129.201, et seq., as amended, and remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds 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 each bond.
- C. If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated, Contractor shall, within 10 days, furnish another bond and surety, both of which shall comply with the requirements of Article 5.

SC-5.02.A

Delete Paragraph 5.02.A in its entirety and replace with the following:

A. All bonds required by the Contract shall be executed by sureties acceptable to Owner, licensed to do business in the state of Michigan, and named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570, as amended, by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury.

SC-5.03.B

Delete Paragraph 5.03.B in its entirety.

SC-5.03.E

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project Delete Paragraph 5.03.E and replace with the following:

E. The insurance and insurance limits herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and Engineer in the Contract Documents.

SC-5.04

Delete Paragraph 5.04 in its entirety and replace with the following:

5.04 *Contractor's Insurance*

- A. Contractor agrees to the fullest extent permitted by law, to defend, indemnify, and hold harmless the Owner, its employees, elected and appointed officials, agents, and volunteers from and against any and all claims, injuries, demands, damages, costs, expenses, liability, suits, (including actual attorney's fees and costs of defense), or liability (including actual attorneys' fees and cost of defense), proceedings, orders, and decrees of every nature and description arising before, during, or after completion of the Contractor's work caused or alleged to have been caused by, arising out of, or resulting from or occurring in connection with the performance of the work, lack of performance of the work, and / or any activity associated with the work of the contractor, its agents, employees, subcontractors, or sub-consultants.
- B. Nothing in the Contract requires the Contractor to defend and/ or indemnify the Owner for claims, injuries, demands, damages, costs, expenses, liability, suits, (including actual attorney's fees and costs of defense), proceedings, orders, and decrees caused by, arising out of, or resulting from the sole negligence of the Owner, its employees, elected and appointed officials, agents, and volunteers, or for any amount greater than the degree of fault of the contractor and that of his or her respective sub-consultants or subcontractors. The obligation of the contractor to defend, indemnify and hold harmless the Owner shall survive and continue after final payment, completion of the work, and completion and/or termination of the agreement.
- C. The Contractor shall procure and maintain during the life of this Agreement the insurance requirements as listed below and furnish within fifteen (15) working days of Notice of Award, Certificates of Insurance as well as **required endorsements** providing insurance coverage as follows:
 - 1. Workers' Compensation Insurance including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan.
 - 2. Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$1,000,000 per occurrence and aggregate. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractor Coverage; (D) Broad Form General Liability Extensions or equivalent, including Explosion, Collapse, and underground (XCU), if applicable.
 - 3. Umbrella or Excess Liability on an "Occurrence Basis" with limits of liability not less than \$4,000,000 per occurrence and aggregate.
 - 4. Automobile Liability Insurance Including Michigan No-Fault Coverage's with limits of liability no less than \$1,000,000 per occurrence, combined single limit for bodily Injury,

- and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and hired vehicles.
- 5. Additional Insured commercial General Liability and Automobile Liability, as described above, shall include an endorsement stating the following shall be additional Insured: The City of Northville, Northville Township, Environmental Consulting & Technology, Inc., Alliance of Rouge Communities, United States Environmental Protection Agency, all elected and appointed officials, all employees, and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed that by naming these parties as additional insured coverage afforded is considered to be primary and any other insurance these parties may have in effect shall be considered secondary and/or excess.
- 6. Cancellation Notices All policies, as described above, shall include an endorsement stating that it is understood and agreed that thirty (30) days, ten (10) days for non-payment of premium, Advance Written notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: Dianne Massa, Clerk, Cit of Northville, 215 W. Main Street, Northville, Michigan 48167.
- 7. Proof of Insurance The contractor shall provide the Owner at the time that the contracts are returned by him/her for execution, a copy of Certificates of Insurance as well as **required endorsements** for all coverage's as listed above.
- D. If any of the above coverage expires during the term of this agreement, the contractor shall deliver renewal certificates and/or policies and endorsements to the Owner at least ten (10) days prior to the expiration date. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to the Owner. The requirement above should not be interpreted to limit the liability of the contractor. All deductibles and SIR's are the responsibility of the Contractor.
- E. It shall be the Contractor's responsibility to provide similar insurance for each subcontractors or to provide evidence that each subcontractor carries such insurance in like amount showing the City of Northville, Northville Township, United States Environmental Protection Agency, Alliance of Rouge Communities, and Environmental Consulting & Technology, Inc. as "ADDITIONAL INSURED" prior to the time such subcontractor proceeds to perform under the contract.
- F. The CONTRACTOR shall not commence work under this Contract until he has obtained and delivered the certificate evidencing all insurance required and such insurance has been approved by the OWNER, nor shall the CONTRACTOR allow any Subcontractor to commence work on their subcontract until all similar insurance required of the Subcontractor has been so obtained and approved. CONTRACTOR shall not commence work until a Notice to Proceed is received from the OWNER or ENGINEER.

H. Payment

The cost of the insurance hereinbefore specified will not be a specific Bid item, but the cost of such insurance will be covered in the various unit prices Bid.

SC-5.06

Delete Paragraph 5.06 in its entirety.

SC-5.07

Delete Paragraph 5.07 in its entirety and replace with the following:

5.07 Waiver of Subrogation

A. The Contractor shall waive any rights of subrogation against the Owner, City of Northville, City of Northville, United States Environmental Protection Agency, Alliance of Rouge Communities, and Environmental Consulting & Technology, Inc. and their respective elected officials, officers, directors, partners, employees, agents, servants and representatives, 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. In the event of any payment by any insurer of the Contractor under any policy of insurance, the insurer of the Contractor shall not be subrogated to any of the Contractor's rights of recovery therefore against the Owner, City of Northville, City of Northville, United States Environmental Protection Agency, Alliance of Rouge Communities, and Environmental Consulting & Technology, Inc. and their respective agencies, elected officials, employees, agents, servants and representatives, and the Contractor shall neither execute nor deliver instruments and papers nor do anything whatever to secure any such rights for the insurer of the Contractor. The Contractor shall do nothing after loss to secure such rights for the benefit of the insurer against the Owner, City of Northville, City of Northville, United States Environmental Protection Agency, Alliance of Rouge Communities, and Environmental Consulting & Technology, Inc. and their respective agencies, elected officials, employees, agents, servants and representatives. The Contractor waives any and all rights of recovery against the Owner, the City of Northville, City of Northville, United States Environmental Protection Agency, Alliance of Rouge Communities, and Environmental Consulting & Technology, Inc., and its agencies, elected officials, employees, agents, servants and representatives, for insured losses occurring to any property insured by the Contractor arising from this Contract.

SC-5.08

Delete Paragraph 5.08 in its entirety.

SC-5.09

Delete Paragraph 5.09 in its entirety.

SC-5.10

Delete Paragraph 5.10 in its entirety.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC-6.01.C

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project Add a Paragraph 6.01.C which is to read as follows:

C. Resident superintendent shall be fluent in English to the level of competency to complete the requirements of Paragraph 6.01.B. Superintendent shall also be fluent in, or have access to a translator for, the primary language of the majority of workers. If a translator is not available, the degree of fluency shall be sufficient to enable the superintendent to complete his/her duties under Paragraph 6.01.A.

SC-6.02.B

Delete Paragraph 6.02.B and replace with the following:

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. Regular working hours are defined as Monday through Friday, excluding holidays, between the hours of 7:00 a.m. and 6:00 p.m. Requests to work other than regular working hours shall be submitted to Engineer, in writing, not less than 48 hours prior to any proposed additional daily working hours (including second and third shifts), weekend work, or scheduled extended work weeks. All requests to work other than regular working hours must comply with all applicable Laws or Regulations. Requests will be reviewed by Engineer and Engineer will either (1) deny the request or (2) provide Contractor with terms for additional Engineering and/or inspection costs to be paid for by Contractor as a result of overtime work in excess of the regular working hours. Contractor shall agree to Engineer's terms prior to Engineer approving Contractor's request to work other than regular working hours.

SC-6.02.C thru G

Add Paragraphs 6.02.C thru H which are to read as follows:

- C. Contractor shall reimburse the Owner for additional Engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Paragraph SC-6.02.B. At Owner's option, overtime costs incurred by Owner may either be deducted from the Contractor's progress payment(s) or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer shall be calculated in accordance with the terms of its contract with the Owner.
- D. Payment for overtime inspection costs will not apply where specific portions of the Work are specified to be performed outside of regular working hours and where, in the sole opinion of the Engineer, the nature of the Work does not require continuous observation by the Engineer of Work in progress. Work which shall invariably be observed shall include all pipe installation, all subgrade preparation and bedding, all reinforcement and cast-in-place concrete placement, and such other Work where the Engineer has limited opportunity to observe important elements of the Work.
- E. <u>Reimbursement of Engineering Cost:</u> The Owner's budget for the Engineer for this Contract is based on the routine duties of the Engineer as generally indicated in the Specifications. Certain

actions or lack of actions on the part of the Contractor necessitate additional effort on the part of the Engineer and, hence, Owner costs for engineering above and beyond the costs for routine engineering services. The Contractor shall pay to the Owner the reasonable costs of such additional engineering effort, which shall include the following:

- 1. Review of Shop Drawings or workings beyond the second submittal.
- 2. Actions related to Contractor requests for deviations or substitutions from the Contract requirements for the Contractor's benefit or preference.
- 3. Observations, investigations, research, and communications relating to construction deviations, errors, or contravention of Contract requirements.
- 4. Observations of suppliers where deviations from the approved Drawings or Contract requirements are found to be taking place or have taken place.
- 5. Any other circumstance where the Contractor's action or lack of action results in unnecessary additional engineering costs to the Owner.

The Engineer or Owner will notify the Contractor, in writing, when one of the above circumstances exists for which reimbursement of engineering costs is required. The Engineer or Owner will be the sole judge of when such circumstances exist and the level of effort involved.

The standard reimbursement rate shall be the actual rate for engineering time plus any travel costs involved. The amount shall be incorporated into a Contract Change Order or otherwise deducted from payment due to the Contractor.

- F. This Contract is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, 40 USC § 3701, et seq. Contractor or any Subcontractor contracting for any part of the Work shall not require nor permit any laborer or mechanic to be employed on the Work in excess of 40 hours in any Work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half (1 ½) times that person's basic rate of pay for all hours worked in excess of 40 hours in such Work week.
- G. Contractor shall employ only competent persons to do the Work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the written consent of Owner.

SC-6.03.D and E

Add Paragraphs 6.03 D and E, which are to read as follows:

- D. The Contract Documents may include performance Specifications, which are identified as such. When used, performance Specifications will specify required results for systems, equipment, and/or materials to be incorporated in the Project, without mandating specific means for achieving the required results. The functional requirements for the systems, equipment, and/or materials are defined together with the operating conditions and/or environment in which they must operate and general standards which must be satisfied. Performance Specifications establish minimum standards that must be met.
- E. Under performance Specifications, Contractor, together with its Subcontractors, Suppliers, and Rouge River AOC

manufacturer, are solely responsible for the design, manufacture, and performance of the specified systems, equipment, or materials. Engineer's review of Shop Drawings for such systems, equipment, or materials is solely to determine that appropriate operating conditions and environment have been referenced by Contractor, Subcontractors, Suppliers, and/or manufacturer, and is not intended for the benefit of Contractor or any other entity.

Observations or requirements that Engineer may communicate to Contractor or others are for clarification only and shall not alter the responsibility of any party nor be interpreted to impose on Owner or Engineer any liability to Contractor, Subcontractors, Suppliers, or manufacturers related to systems, equipment, or materials supplied pursuant to a performance Specification. Neither Contractor nor anyone claiming rights by virtue of this Contract or any subcontract or order placed hereunder shall seek to recover from Owner or Engineer any losses or damages suffered as a result of any deficiency, defect, or performance problem in any systems, equipment, or materials supplied pursuant to a performance specification.

SC-6.05A.2.d

Replace Paragraph 6.05 A.2.d in its entirety with the following:

- 1. Contractor shall submit each substitute item in accordance with the substitution request procedures outlined in Section 01300. No substitute item will be reviewed prior to or without this information being submitted.
- 2. Additional information may consist of completing Engineer's vendor checklist, field mock-ups, special samples, pilot testing, or other special requirements that Engineer determines necessary to assess if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore.

SC-6.05.E.1. and 2

Add Paragraphs 6.05.E.1 and 2 which are to read as follows:

- 1. Prior to Engineer's review of a substitute, Engineer will prepare a Work Change Directive to document Engineer's anticipated costs in reviewing Contractor's substitute. The Work Change Directive shall be executed prior to Engineer commencing its review.
- 2. The Work Change Directive will include Engineer's opinion of the probable hours required to review the substitute. Engineer will notify Contractor if the hours listed on the Work Change Directive are to be exceeded. Engineer's costs for reviewing a substitute shall be in accordance with its contract with Owner.

SC-6.06.A

Delete Paragraph 6.06.A and replace with the following:

A. Contractor shall not employ any Subcontractor, Supplier or other individual or entity (including those who are to furnish the principal items of materials or equipment), whether initially or as a replacement, against whom Owner may have reasonable objection. 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 any right of Owner or Engineer to reject defective Work. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity, to furnish or perform any of the Work against whom Contractor has reasonable objection.

SC-6.06.B

Delete Paragraph 6.06.B in its entirety.

SC-6.06.E

Add a new sentence at the end of Paragraph 6.06.E which is to read as follows:

Owner or Engineer may furnish to any such Subcontractor, Supplier or other individual or entity, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.

SC-6.06.G

Delete everything in Paragraph 6.06.G after and including the sentence starting "Whenever any such agreement "

SC-6.07

Delete Paragraph 6.07 in its entirety and replace with the following: 6.07 *Patent Fees and Royalties*

A. All royalties or other charges for any Contractor provided patent, copyright, trademark, trade secret, or other proprietary right to be used in the performance of the Work shall be considered as included in the price of the Contract Price. Contractor warrants that any products sold or processes used in the performance of this Contract do not infringe upon or violate any patent, copyright, trademark, trade secret or any other proprietary rights of any third party. If a third party makes a claim against the Owner, the Owner must promptly notify the Contractor. The Contractor must defend the claim in the name of the Owner, at the Contractor's expense. The Owner will cooperate with the Contractor and/or its Suppliers in the defense against the suit. In no event shall Contractor make any admission of guilt or liability on behalf of the Owner without the Owner's prior, written consent. The Contractor must indemnify the Owner against any loss, cost, expense or liability arising out of the claim, whether or not the claim is successful.

If the Owner's use of any portion of the products or documentation provided by Contractor as part of its Services under this Contract is enjoined by a court of competent jurisdiction, Contractor shall at its option and expense and within five (5) days of the enjoinment:

- 1. Procure for the Owner the right to use such infringing portion;
- 2. Replace such infringing portion with a non-infringing portion providing equivalent functionality; or

3. Modify the infringing portion so as to eliminate the infringement while providing equivalent functionality.

Contractor may delegate its responsibilities under this Paragraph 6.07 to the manufacturer of the allegedly infringing product, provided Contractor has received the advance, written consent of the Owner. Such consent will not be unreasonably withheld or delayed.

SC-6.08.B

Add Paragraph 6.08.B which is to read as follows:

- B. Owner has secured or will secure the following permits, approvals and licenses and has paid or will pay any associated charges and fees:
 - 1. Michigan Department of the Environment, Great Lakes & Energy/U.S. Army Corps of Engineers Joint Permit (Included in Appendix to these documents).

SC-6.13.A

Delete the sentence beginning with "Such responsibility does . . ." in its entirety (the remainder of Paragraph 6.13.A remains unchanged).

SC-6.13.C and D

Delete Paragraphs 6.13.C and D in their entirety.

SC-6.17.A.

Delete the first sentence of Paragraph 6.17.A in its entirety and replace with the following (the remainder of Paragraph 6.17A remains unchanged):

Contractor shall submit Shop Drawings to Engineer for review and approval in accordance with the Acceptable Schedule of Shop Drawings and Sample Submittals including such additional submittals deemed necessary by the Engineer to provide further clarification or due to changes in the Work.

SC-6.18.A

Delete the last sentence of Paragraph 6.18.A beginning with "No Work shall . . ." and replace with the following:

No work shall be delayed or postponed pending resolution of any disputes or disagreements, except if a stop work order in accordance with the Contract Documents has been issued or as Owner and Contractor may otherwise agree in writing.

SC-6.19.D

Add Paragraph 6.19.D which is to read as follows:

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project

D. Manufacturer's Guaranty/Warranty

1. The Contractor shall obtain the following guaranty/warranty from the manufacturer of all major pieces of equipment furnished and installed on this Project. Such guaranty/warranty shall be for the benefit of Owner and be furnished in writing by the manufacturer. The Contractor's and manufacturer's obligations under this provision are in addition to other express or implied warranties under the Contract Documents and under the law and in no way diminish any other right that the Owner may have against the Contractor or manufacturer for faulty material, equipment or work. The warranty period shall not be interpreted as a limitation on the time in which the Owner can enforce such other duties, obligations, rights, or remedies:

The manufacturer warrants and guarantees for a period of one (1) year from the date of Final Completion, or such longer period that may be specified in the Contract Documents, that all materials and equipment furnished and installed shall be free from flaws, defects in material and workmanship and shall be in conformance with the Contract Documents.

SC-6.20.A

Add to the first sentence of Paragraphs 6.20.A after Owner "or the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc." (the remainder of Paragraph 6.20.A remains unchanged)

SC-6.20.B

Add to the first sentence of Paragraphs 6.20.B after Owner "or the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc." (the remainder of Paragraph 6.20.A remains unchanged)

SC-6.20.D thru F

Add Paragraphs 6.20.D thru F which are to read as follows:

D. In the event that any claim for damages is made, asserted or threatened against the Owner and/or its officers, agents, employees or elected officials and/or a lien is recorded against the Owner's property as a result of the Contractor's failure to pay for any labor, services, materials, equipment, taxes or other items or obligations furnished or incurred for or in connection with the Work to be provided under this Contract, upon written notice, the Owner may withhold from any payments due or to become due to the Contractor under this Contract an amount sufficient, in its judgment, to (1) satisfy, discharge, and/or defend against any such claim or any action which may be brought or judgment which may be recovered thereon, (2) make good any such nonpayment, damage, failure or default, and/or (3) compensate the Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc. for and indemnify and hold it harmless against any and all losses, liability, damages, costs and expenses, including legal fees and costs, which may be sustained or incurred in connection therewith. If the amounts withheld under the Contract are insufficient to compensate the Owner, the City of Northville,

Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., for its losses, damages, costs and expenses, the Owner may require the Contractor to make immediate payment of any such deficiency or offset such deficiency against the compensation to be paid the Contractor in any concurrent, successive or future contracts between the parties.

E. In furtherance of but not in limitation of the indemnity provisions in this Contract, the Contractor hereby expressly and specifically agrees that its obligation to indemnify, defend and save the Owner harmless as provided in this Contract shall not in any way be affected or diminished by any statutory or constitutional immunity it enjoys from suits by its own employees or from limitations of liability or recovery under worker's compensation laws. The Contractor further agrees that this indemnity does not constitute or act as a waiver of any governmental immunity the Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., its agencies, officers, employees, agents or elected officials enjoy under applicable statutory or common law.

F. The indemnity provisions in this Contract survive the Contract's termination.

ARTICLE 7 - OTHER WORK AT THE SITE

SC-7.04

Add Paragraph 7.04, which is to read as follows:

7.04 Other Unrelated Work

A. Should Contractor cause damage to the work property of any other contractor at the Site or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., or the construction coordinator or the elected officials, officers, directors, partners, employees, agents, servants, representatives, or other consultants or subcontractors of each, Contractor shall promptly attempt to settle with such other contractor by agreement or to otherwise resolve the dispute by arbitration or at law. The indemnity provisions of Paragraph 6.20 of the General Conditions are applicable to this situation.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., Engineer, and construction coordinator and the elected officials, officers, directors, partners, employees, agents, servants, representatives, or other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., Engineer, Engineer's consultants, or the construction coordinator or the elected officials, officers, directors, partners, employees, agents, servants, representatives or other consultants and

subcontractors of each and any of them to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other Contractor at the Site give rise to any other claim, Contractor shall not institute any action legal or equitable, against Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., Engineer, or the construction coordinator or the elected officials, officers, directors, partners, employees, agents, servants, representatives, or other consultants and subcontractors of each and any of them, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., Engineer, or the construction coordinator or the elected officials, officers, directors, partners, employees, agents, servants, representatives or other consultants and subcontractors of each and any of them, on any such damage or claim.

C. If Contractor is delayed at any time in performing or furnishing Work by an act or neglect of another contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of Contract Times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to the Owner, the City of Northville, Northville Township, the Alliance of Rouge Communities, the United States Environmental Protection Agency, and Environmental Consulting & Technology, Inc., Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

SC-8.06

Delete Paragraph 8.06 in its entirety. SC-8.11

Delete Paragraph 8.11 in its entirety. SC-8.12

Delete Paragraph 8.12 in its entirety.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.01.A

Delete everything in Paragraph 9.01.A after the first sentence.

SC-9.03.B

Add Paragraph 9.03.B which is to read as follows:

B. Engineer will furnish a Project Representative and assistants to assist Engineer in observing the performance of the Work.

Rouge River AOC Johnson Creek Fish Hatchery Park Habitat Restoration Project SC-9.10

Delete Paragraph 9.10 in its entirety.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

SC-10.01.C and D

Add Paragraphs 10.01.C and D which are to read as follows:

- C. If Contractor claims (1) that any work it has been ordered to do is not part of the Work required by the Contract Documents, hereinafter referred to as "Extra Work," (2) that it has performed or is going to perform Extra Work, or (3) that any action or omission of Owner or Engineer is contrary to the terms and provisions of the Contract Documents, Contractor shall:
- 1. Promptly comply with such order;
- 2. File with Engineer a written notice stating the basis of its claim and a request for a determination thereof, within 14 working days after being ordered to perform the Work claimed by it to be Extra Work, or within 14 working days after commencing performance of the Extra Work, or within 14 working days after the action or omission of the Owner or the Engineer occurred, whichever date shall be the earlier.
- 3. File with Engineer a verified detailed statement, with documentary evidence of the items and basis of its Claim, within 30 calendar days after said alleged Extra Work was required to be performed or said alleged Extra Work was commenced, or said alleged action or omission by Owner or Engineer, whichever date shall be earlier.
- 4. Produce for Owner's examination, upon notice from Owner, all of Contractor's books of account, bills, invoices, payrolls, subcontracts, time books, progress records, daily reports, bank deposit books, bank statements, checkbooks and canceled checks showing all of its actions and transactions in connection with or relating to or arising by reason of its Claim, and submit Contractor and its Subcontractors and the officers, directors, partners, employees, agents, servants, representatives, or other consultants of each for examination under oath by any person designated by Owner to investigate any Claims made against Owner under the Contract, such examination to be made at the offices of Owner or Owner's agent;
- 5. Proceed diligently, pending and subsequent to determination of Owner with respect to any such disputed matter, with the performance of the Contract and in accordance with all instructions of Owner and Engineer.
- D. Contractor's failure to comply with any or all of the foregoing provisions of Paragraph 10.01.C shall be deemed to be: (1) a conclusive and binding determination that said order, work action or omission is not additional or Extra Work for Contractor and is not contrary to the terms and provisions of the Contract; and (2) a waiver by Contractor of all Claims for additional compensation or damages as a result of said order, work action or omission.

- 1. Only the Owner may waive or modify any of the foregoing provisions, which must be done so in writing and signed by the Owner. In any action against Owner to recover any sum in excess of the sum certified by Owner to be due under or by reason of the Contract, Contractor must allege in its complaint and prove at trial compliance with the provisions of Paragraph 10.01.C.
- 2. Nothing in this Paragraph 10.01.C or D shall in any way affect Owner's right to obtain an examination of Contractor before trial or discovery and inspection in any action that might be instituted by or against Owner or Contractor.

SC-10.05.G

Add Paragraph 10.05.G which is to read as follows:

G. If the provisions of Paragraph 10.05 conflict with the provision of Article 15, the provisions of Paragraph 10.05 shall be superseded by the provisions of Article 15 of the General Conditions, as amended by the Supplementary Conditions.

SC-10.06

Add Paragraph 10.06, which is to read as follows:

10.06 Change in Work Quotation

A. At any time Engineer may request a quotation from Contractor for a proposed change in the Work. Within 21 calendar days after receipt of a request for a quotation for a proposed change, Contractor shall submit to Engineer a written and detailed proposal for an increase or decrease in the Contract Price or Contract Times for the proposed change. Engineer shall have 21 calendar days after receipt of the detailed proposal to respond in writing. The proposal shall include an itemized estimate if all cost and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in accordance with Articles 11 and 12 and in sufficient detail reasonably to permit an analysis by Engineer of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed, or impacted. Any amount claimed for subcontracts shall be similarly supported. Itemized schedule adjustments shall be in sufficient detail to permit an analysis of impact as required by the Contract Documents. Notwithstanding the request for quotation, Contractor shall carry on the Work and maintain the progress schedule. Delays in the submittal of the written and detailed proposal will be considered non-prejudicial as defined in the Supplementary Conditions.

SC-10.07

Add Paragraph 10.07, which is to read as follows:

10.07 Equitable Adjustment To Contract

A. The adjustment in the Contract Price and/or Contract Times stated in the Change Order shall comprise the total price and/or time adjustment due or owed the Contractor for the Work or changes defined in the Change Order. By executing the Change Order, the Contractor acknowledges and agrees that the stipulated price and/or time adjustments include the costs and delays for all work contained in

Rouge River AOC Johnson Creek Fish Hatchery Park the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected Work under this Contract. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in Contract Price or Contract Times as a result of increases or decreases in costs and time of performance caused directly or indirectly from the change, subject to the current scope of the entire Work as set forth in the Contract Documents. Acceptance of this waiver constitutes an agreement between Owner and Contractor that the Change Order represents an equitable adjustment to the Contract, and that Contractor will waive all rights to file a Claim on the Change Order after it is properly executed.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.01.A.1

Delete the second sentence in Paragraph 11.01.A.1 in its entirety and replace with the following:

Such employees shall include foremen at the site.

SC-11.02.A

Delete Paragraph 11.02.A in its entirety and replace with the following:

A. Contractor agrees that an allowance, if any, is for the sole use of Owner to cover unanticipated costs.

SC-11.02.B thru D

Delete Paragraphs 11.02.B thru D in their entirety.

SC-11.03.D

Delete Paragraph 11.03.D in its entirety and replace with the following:

- D. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:
- 1. If the total cost of a particular item of Unit Price Work amounts to five percent (5%) 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 percent (25%) from the estimated quantity of such item indicated in the Contract; and
- 2. If there is no corresponding adjustment with respect to any other item of Work; and
- 3. If Contractor believes that Contractor has incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Unit Price in accordance with Paragraph 10.05 and Article 11 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01.B.2

Delete Paragraph 12.01.B.2 in its entirety.

SC-12.01.C.1

Delete Paragraph 12.01.C.1 in its entirety.

SC-12.01.C.2.b

In the second line of Paragraph 12.01.C.2.b, before the semicolon add the following words:

"... based on Subcontractor's Cost of the Work;"

SC-12.01.D

Add Paragraph 12.01.D which is to read as follows:

A. The Contract Price, including profit or fee, shall be adjusted to exclude any significant sums by which the Owner finds that such price was increased because the Contractor furnished cost or pricing data which was inaccurate, incomplete, or not current as of the date agreed upon between the Owner and Contractor.

SC-12.02.C

Add Paragraph 12.02.C which is to read as follows:

C. Except as otherwise stated in the Contract Documents, the suspension or termination of Work by Contractor on account of weather shall not entitle Contractor to adjustment of Contract Price or Contract Times.

SC-12.03.F and G

Add Paragraph 12.03.F and G which is to read as follows:

F. Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both Owner and Contractor, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for such delay. In no event shall Owner be liable to Contractor, any Subcontractor, any Supplier, any other person or organization, or to any surety for or officer, director, member, partner, employee, agent, consultant or subcontractor of any of them, for damages arising out of or resulting from (1) delays caused by or within the control of Contractor, or (2) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility Owners or other contractors performing other work as contemplated by Article 6.

G. The Contractor understands and acknowledges that the performance of the work is required to be performed within an active river system and floodplain. The Contractor further acknowledges that it is an active flowing river and the floodplain area may, from time to time, become wet with water during the performance of the work

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.05.B

Add Paragraph 13.05.B which is to read as follows:

B. If Owner stops Work under Paragraph 13.05.A, Contractor shall be entitled to no extension of Contract Times or increase in Contract Price.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02.A.1.a

Add Paragraph 14.02.A.1.a which is to read as follows:

- a. Contractor shall furnish, with each Application for Payment submitted, the following required documents/items. Failure to include all required documents/items, satisfactory to Owner, may result in a refusal to recommend the whole or any part of the payment:
 - i. Application for Payment, notarized and executed;
 - ii. As used, running sub-line items for Unforeseen Allowance Line;
 - iii. Invoices for on-site stored materials;
 - iv. Invoices, documentation and proof of insurance for off-site stored materials;
 - v. Invoices for payment under Allowance items where contractor is reimbursed for actual cost of invoice plus 5%;
 - vi. Contractor Declaration Form;
 - vii. Waiver of Lien from all subcontractors, sub-subcontractors and suppliers;
 - viii.Completed MBE/WBE Form;
 - ix. Updated draft schedule

SC-14.02.A.1.b

Add Paragraph 14.02.A.1.b which is to read as follows:

a. Contractor shall furnish evidence, satisfactory to Owner, that previous progress payments received on account of materials or equipment not incorporated and suitably stored, have in fact been paid to the respective Subcontractor(s) or Supplier(s) within 60 days of payment by Owner to Contractor. Failure of Contractor to provide such evidence of payment may result in Owner's withdrawal of previous approval(s) for payment(s) and deduction of the cost of related materials or equipment from any payments due Contractor.

SC-14.02.A.2

At the end of Paragraph 14.02.A.2 add the following:

The affidavit of Contractor must be signed by the Contractor and shall read as follows: The undersigned Contractor certifies that to the best of its knowledge, information and belief the Work for this Application for Payment has been completed in accordance with the Contract Documents and the current payment shown herein is now due. All previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations for, including, but not limited to, amounts due to Subcontractors and Suppliers, associated with prior Applications for Payment.

SC-14.02.A.3

Delete Paragraph 14.02.A.3 in its entirety and replace with the following:

3. The amount of retainage with respect to progress payments will be as stipulated in the Contract Documents and may be changed from time to time as determined by the Owner and the Engineer.

SC-14.02.B.1

In Paragraph 14.02 B.1 delete the number 10 and replace with the number 14.

SC-14.02.C.1

At the beginning of Paragraph 14.02.C.1 delete the words, "Ten days" and replace with the word, "Promptly."

SC-14.02.C.2 thru 4

Add Paragraphs 14.02.C.2 thru 4 which are to read as follows:

- 2. Should Contractor neglect to pay any undisputed claims, made in writing to Owner within 30 days after completion of the Work, but continuing unsatisfied for a period of 90 days, Owner may pay such claim and deduct the amount thereof from the balance due Contractor. Owner may also, with the written consent of Contractor, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for the Work, for which claims have not been filed.
- 3. Security is provided both by the Payment Bond and the power of Owner to retain any monies for claims, but payment by one shall in no way impair or discharge the liability of the other.
- 4. All monies paid by Owner in settlement of claims as aforesaid, with the costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment(s) due Contractor under the terms of the Contract Documents.

SC-14.03.B and C

Add Paragraphs 14.03.B and C which are to read as follows:

- B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.
- C. Contractor shall indemnify and save Owner harmless from all claims arising out of the lawful demands of Subcontractors, Suppliers, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this Paragraph 14.03.C be construed to impose any obligations upon Owner to either Contractor or Contractor's surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner, shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-14.05.A.4

Delete Paragraph 14.05.A.4 in its entirety and replace with the following:

4. Owner at any time may request Contractor in writing to permit Owner to take over operation of any part of the Work although it is not substantially complete. A copy of such request will be sent to Engineer, and within a reasonable time thereafter Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If Contractor does not object in writing to Owner and Engineer that such part of the Work is not ready for separate operation by Owner, Engineer will finalize the list of items to be completed or corrected and will deliver such lists to Owner and Contractor together with a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that part of the Work which will become binding upon Owner and Contractor at the time when Owner takes over such operation (unless they shall have otherwise agreed in writing and so informed Engineer). During such operation and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct items on said list and to complete other related Work.

SC-14.07.A.2

Delete everything in Paragraph 14.07.A.2 after "... Contract Documents"

SC-14.07.B.1.

Delete Subsection 14.07.B.1 in its entirety and insert the following in its place:

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 all 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 Documents have been fulfilled, Engineer will indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. If the Application for Payment and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with applicable Laws and Regulations, pay Contractor the amount recommended by Engineer.

SC-14.07.C.1.

At the beginning of Paragraph 14.07. C.1 delete the words, "Thirty days" and begin with the word, "Promptly."

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.02 thru 15.05

Delete everything in Article 15 after Paragraph 15.01 and replace with the following:

15.02 Owner's Right to Terminate

A. When in the Owner's best interest, the Owner may unilaterally terminate this Contract, in whole or in part, at any time, whether or not Contractor is in default of any of its obligations under the Contract, by giving written notice to the Contractor. Upon terminating the Contract, Owner shall not incur any further liability to Contractor, except as provided in this Article 15, which sets forth Contractor's exclusive remedies. The termination notice must specify the effective date, at least seven (7) days prior to the effective date of the termination, and the Contract will terminate as if the date were the date originally given for the expiration of the Contract. If the Contract is terminated, Owner will pay Contractor (without duplication of any items) for completed and acceptable Work, executed in accordance with the Contract Documents prior to the effective date of termination, as soon as can be authorized. Owner will compute the amount of the payment on the basis of the services rendered, and other means which, in the judgment of the Owner, represents a fair value of the services provided, less the amount of any previous payments made. Owner shall have no obligation for and shall not be required to make payments to Contractor directly, or on account of claims by Contractor's Subcontractors, for loss of anticipated profit, unabsorbed overhead, interest on claims, unamortized depreciation costs, and general and administrative burden charges, resulting from the termination of the Contract. The final payment constitutes full payment. If the Contractor accepts the payment, the Contract is satisfied. The parties agree that no payments under this Article 15 will exceed the Contract

Price.

B. If the Owner terminates this Contract because the Contractor has failed to comply with any of the material terms and conditions of this Contract, including, but not limited to, defective Work, failure to supply sufficient skilled workers or suitable materials or equipment, failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04, disregard of Laws or Regulations, disregard of the authority of Engineer, or failure to perform the Work in such a way that the completed Work will conform to the Contract Documents, then the Owner may procure, upon such terms and in such manner as the Owner may deem appropriate, services similar to those terminated, and the Contractor shall be liable to the Owner for any costs to obtain and transition similar services. In addition to any legal remedies otherwise available to the Owner by law or equity, the Contractor shall be responsible for all additional 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) incurred by the Owner in connection with the completion of the Contract. Such expenses shall be deducted from any monies due or which may become due the Contractor under the Contract. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor shall pay, on demand, such excess amount to the Owner. Should a deficiency exist, the Owner may offset such a deficiency against the compensation to be paid the Contractor in any concurrent, successive or future contracts between the parties. All excess reprocurement costs and damages shall not be considered by the parties to be consequential, indirect or incidental, and shall not be excluded by any other terms otherwise included in the Contract. When exercising any rights or remedies under this Paragraph 15.02.B, Owner shall not be required to obtain the lowest price for the Work performed.

C. Where Contractor's services have been terminated by Owner under Paragraph 15.02, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

15.03 Contractor's Obligations to Owner upon Receipt of Termination Notice.

A. After receipt of a notice of termination and irrespective of whether Contractor disputes the Owner's right to terminate this Contract pursuant to said notice, and except as otherwise directed by the Owner, the Contractor must:

- 1. Stop Work under the Contract on the date and to the extent specified in the notice of termination;
- 2. Make no further commitments with respect to the Contract or Contract funds, including payroll costs beyond the date the Owner specifies, except as may be necessary for completion of such portion of the Work under this Contract that is not terminated;
- 3. Immediately take all action as may be necessary or as the Owner may reasonably direct to assure the protection of the property in the Contractor's possession and in which the Owner has or may acquire any interest, the cost of which action shall be paid by the Owner, unless the termination is the result of Contractor's default hereunder;
- 4. As of the date the termination is effective, present all Contract records and deliver to the Owner the records, data, notes, reports, discs, and documents (hereinafter

"Records") as the Owner specifies, all pertinent keys to files, and carry out such directives as the Owner may issue concerning the safeguarding or disposition of files and property;

- 5. Submit within 30 days a final report of receipts and expenditures of funds relating to this Contract.
- 6. Place no further orders on subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the Work under this Contract as is not terminated;
- 7. Terminate all orders and subcontracts to the extent that they relate to the portion of Work so terminated;
- 8. Submit within 30 days a listing of all creditors, Subcontractors, lessors, and other parties with which the Contractor has incurred financial obligations pursuant to the Contract.

15.04 Records upon Termination

A. Upon termination of this Contract, all Records prepared by the Contractor under this Contract or in anticipation of this Contract must, at the option of the Owner, become its exclusive property, whether or not in the possession of the Contractor. The Records are free from any claim or retention of rights on the part of the Contractor except as specifically provided.

- B. Any intentional failure or delay by the Contractor to deliver the Records to the Owner will cause irreparable injury to the Owner not adequately compensable in damages and for which the Owner has no adequate remedy at law. The Contractor will pay the Owner \$500.00 per day as damages, and not as a penalty, until it delivers the Records to the Owner. The Owner may seek and obtain injunctive relief in a court of competent jurisdiction and compel delivery of the Records which the Contractor consents to as well as all applicable damages and costs. The Owner has unrestricted use of the Records for the purpose of completing the Work.
- C. Access to the Records prior to delivery must be restricted to authorized representatives of the Owner and the Contractor. The Contractor has no right to disclose or use any information gathered in the course of its Work without obtaining the written concurrence of the Owner. All the information must be confidential and handled in such a manner at all times as to preserve confidentiality. The Records as well as any related products and materials are proprietary to the Owner, having been developed for the Owner for its own and sole use.

15.05 Cooperation in Orderly Termination

A. Each party will assist the other party in the orderly termination of this Contract and the transfer of all assets or property, tangible or intangible, as may be necessary for the orderly, non-disrupted business continuance of each party.

ARTICLE 16 - DISPUTE RESOLUTION

SC-16.01.A.

Add a new sentence at the end of paragraph 16.01.A, which is to read as follows:

Disputes between the Owner and Contractor shall be mediated only if and to the extent agreed to by the parties at the time each dispute rises. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.

ARTICLE 17 - MISCELLANEOUS

SC-17.01.B thru F

Add Paragraphs 17.01.B thru F to read as follows:

- B. All written notices must be delivered to the Owner as follows:
- C. All written notices must be delivered to the Contractor as follows:
- D. All Notices are deemed given on the day of mailing. Either party to this Contract may change its address for the receipt of written notices at any time by giving written notice to the other as provided, with the exception that Contractor's office at or near the Site of the Work, is hereby designated and shall remain a place of delivery for written notices to Contractor. Any notice given by a party must be signed by an authorized representative of such party.
- E. Termination notices and change of address notices are an exception and must be sent by registered or certified mail, postage prepaid, return receipt requested
- F. The provisions of this Paragraph survive termination of the Contract.

SC-17.05

Delete Paragraph 17.05 in its entirety and replace with the following:

17.05 Jurisdiction and Law

A. This Contract, and all actions arising from it, must be governed by, subject to, and construed according to the law of the State of Michigan. The Contractor consents to the personal jurisdiction of any competent court in Wayne County, Michigan, for any action arising out of this Contract. The Contractor will not commence any action against the Owner because of any matter arising out of or relating to the validity, construction, interpretation and enforcement of this Contract, in any courts other than those in the County of Wayne, State of Michigan unless original jurisdiction is in the United States District Court for the Eastern District of Michigan, Southern Division, the Michigan Supreme Court or the Michigan Court of Appeals.

SC-17.07 thru 17.12

Add Paragraphs 17.07 thru 17.13, which are to read as follows:

17.07 Anti-Discrimination Practices

- A. During the performance of this contract, the contractor, for itself, its assignees and successors, in interest (hereinafter referred to as the "Contractor") agrees, as follows:
 - Compliance with Regulations: The Contractor shall comply with Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

Further, on any federal assisted contract, the Contractor and sub-contractor agree to comply with the Equal Employment Opportunity Compliance Procedures, CFR 23, Subpart D – Construction Contract Equal Employment Opportunity Compliance Procedures, CFR 49 – Non-Discrimination in Federally-assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964. E.E. 11246, Title VII of the Civil Rights Act of 1964, Michigan's Persons With Disabilities Act of 1976, and the Michigan Elliot-Larsen Civil Rights Act of 1976.

- 2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection, retention, and treatment of subcontractor, including procurements of materials in the discrimination prohibited by Section 21.5 of the Regulation, including employment practices when the Contractor covers a program set for in Appendix B of the Regulations.
- 3. Solicitation for Subcontracts, including procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiations made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under the contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- 4. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations, or directives issues pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the owner to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the owner, as appropriate, and shall set forth what efforts it has made to obtain the information.
- 5. **Sanctions for noncompliance:** In the event the Contractor's noncompliance with the nondiscrimination provisions of this contract, the Owner shall impose such contract sanctions as it may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the Contractor under the contract until the Contractor complies, and/or
 - b. Cancellation, termination or suspension of the contract, in whole or in part.

Incorporation of Provisions: The Contractor shall include provisions of paragraphs (1) through (6) in every subcontract, including procurement of material and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the Owner may direct as a means of enforcing such provision including sanctions for noncompliance: Provided, however, that, in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the Owner to enter into such litigation to protect the interest of the Owner.

17.08 Records - Access

- A. The Contractor must maintain complete books, ledgers, journals, accounts, correspondence, or documents (hereinafter "Records"), including electronically stored information, in which it keeps all entries reflecting its operation pursuant to this Contract. The Contractor must keep the records according to generally accepted accounting practices and for a minimum of three (3) years from the date of final payment under the Contract.
- B. The Owner has the right to examine and audit all Records as it deems necessary of the Contractor, or any Subcontractors, Suppliers, or agents performing, furnishing materials or equipment, or rendering services for any part of the Work under this Contract, whether direct or indirect, which will permit adequate evaluation of the services or Work or the cost or pricing data submitted by the Contractor. The Contractor must include a similar covenant allowing for audit by the Owner in any contract it has with a Subcontractor, Supplier, or agent whose services or Work will be charged directly or indirectly to the Owner. The Owner may delay payment to the Contractor pending the results of any such audit without penalty or interest.
- C. If a discrepancy should arise as to the amount of compensation due the Contractor, as a result of any audit conducted by or for a county, state of Michigan, or federal agency relating to the Contractor's performance under this Contract, the Owner may retain the amount of compensation in question from any funds allocated to the Contractor but not yet disbursed under the Contract. Should a deficiency still exist, the Owner may offset such a deficiency against the compensation to be paid the Contractor in any successive or future contracts between the parties.
- D. The provisions of this Paragraph survive termination of the Contract.

17.9 Relationship of Owner to Engineer

A. Nothing in these General Conditions, as amended by the Supplementary Conditions, shall be used by Engineer against Owner to construe the relationship between Engineer and Owner. Engineer has no third-party beneficiary rights in these General Conditions, as amended, against Owner and may not seek to enforce any of the provisions of these General Conditions, as amended, against Owner. The relationship between Owner and Engineer shall be governed by a separate agreement between Owner and Engineer.

17.10 Liquidated Damages

A. The Owner and the Contractor hereby agree to the requirements set forth in this Contract. It is agreed between the Owner and Contractor that the actual damages to the Owner as a result of Contractor's failure to perform as required under this Contract would be difficult or impossible to

determine with accuracy. The Owner and the Contractor therefore agree that liquidated damages as set forth below shall be a reasonable approximation of the damages that will be suffered by the Owner as a result of Contractor's failure to perform as required. Accordingly, if Contractor fails to perform its obligations under this Contract, except its obligations under Paragraph 6.20, Indemnification, at the written direction of the Owner, the Contractor shall pay the Owner the indicated amount as liquidated damages, and not as a penalty. The Owner retains all available legal and equitable remedies to enforce Paragraph 6.20. Amounts due the Owner as liquidated damages, if not paid by the Contractor within 15 days of notification of assessment, may be deducted by the Owner from any money payable to the Contractor pursuant to this Contract. The Owner will notify the Contractor in writing of any Claim for liquidated damages pursuant to this Paragraph on or before the date the Owner deducts such sums from money payable to the Contractor. No delay by the Owner in assessing or collecting liquidated damages shall be construed as a waiver of such rights.

- B. In accordance with this Paragraph, Contractor agrees to forfeit and pay Owner as liquidated damages for delay (but not as a penalty), the amount of \$400.00 for each calendar day that expires after the time specified in the Contract Documents for Substantial Completion until the Work is substantially complete; and \$400.00 for each calendar day that expires after the time specified in the Contract Documents for completion of the Work so that it is ready for final payment, as evidenced by Engineer's written recommendation of final payment, until the Work is completed. These amounts represent a reasonable estimate of Owner's expenses for extended delays (but not as a penalty), and for inspection, engineering services, and administrative costs associated with such delay.
- C. The Contractor shall not be liable for liquidated damages when, in the sole opinion of the Owner, incidents or delays result directly from Excusable Delays.

17.11 Confidential Information

A. If the Owner discloses confidential information to the Contractor's employees pertaining to the Owner's past, present and future activities, the Contractor must instruct its employees to regard all information gained by each person as a result of the services or Work to be performed as information which is confidential and not to be disclosed to any organization or individual without the prior written consent of the Owner.

- B. The Contractor agrees to take appropriate action with respect to its employees to insure that the obligations of nonuse and non-disclosure of confidential information concerning this Contract can be fully satisfied.
- C. The provisions of this Paragraph survive termination of the Contract.

17.12 Assigning or Subletting the Contract

A. Contractor will not assign or in any manner transfer this Contract, or any part or parts hereof, or interest herein, or subcontract for any Work, services, equipment or operations without the prior, written consent of the Owner. In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with its own organization, Work amounting to not less than 51% of the total original or revised Contract Price, whichever is less, [excluding any identified specialty items. Specialty items may be performed by subcontract and the amount of any such specialty items

performed may be deducted from the total original or revised Contract Price before computing the amount of Work required to be performed by the Contractor's own organization].

- "Its own organization" shall be construed to include only workers employed and paid directly by Contractor and equipment owned or rented by Contractor, with or without operators. Such term does not include employees or equipment of a Subcontractor, assignee, or agent of Contractor.
- 2. "Specialty items" shall be construed to be limited to Work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the Contract as a whole and in general, are to be limited to, minor components of the overall Contract. Under this project the growing and planting of vegetation shall be considered "specialty items".
- B. The Contract Price, which the requirements set forth in Paragraph 17.14.A is computed upon, does include the cost of material and manufactured products which are to be purchased or produced by the Contractor under the Contract provisions.
- C. Any unauthorized assignment or transfer will be considered a breach of this Contract and result in the cancellation of the Contract at the Owner's discretion. If the Contract is not canceled, the assignment shall be deemed null and void. Consent by the Owner to one or more assignments of this Contract will not operate to extinguish the Owner's rights under this Paragraph.
- D. The sale of fifty percent (50%) or more of the capital stock of the Contractor (if the Contractor is a corporation having less than 10 shareholders) will constitute an assignment of this Contract within the meaning of this Paragraph.

SECTION 00900

PROJECT NOTES

General

These Specifications form a part of the Specifications and Contract Documents for the Rouge River AOC Johnson Creek Fish Hatchery Habitat Restoration Project with the requirements herein specified supplementing and/or superseding those contained in the balance of the Specifications and Contract Documents.

Project Team

The "Owner" for this project is defined as the entity with whom the Contractor has entered into the Agreement and shall be considered the City of Northville and the Alliance of Rouge Communities. The property within which the project is to be performed is owned by the City of Northville. The "Engineer" is Environmental Consulting & Technology, Inc. (ECT), and will act as the Owner's Representative for this project.

Safety

The Contractor shall conform to all applicable OSHA and MIOSHA regulations.

Permits and Regulations

The Contractor shall secure and bear the cost of any permits or licenses of a temporary nature necessary for the execution of the work. The Joint Permit has been obtained from the Michigan Department of the Environment, Great Lakes & Energy and the U.S. Army Corps of Engineers. A copy of the permit is included in the Appendix of the Contract Documents. The Contractor is responsible for adhering to the requirements included in those permits. All other permits, including the Soil Erosion and Sediment Control permit, shall be the Contractor's responsibility to secure. Additionally, he shall secure and bear the cost of shutting off and turning on public services of every nature which may be required by his operations. Where such discontinuance of service affects consumers, due and sufficient notice shall be served upon those so affected.

Local Requirements

Contractor to comply with the City of Northville and Northville Township Ordinances.

Federal Conditions

The Contractor shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, Contractor is required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, Contractor is required to pay wages not less than once a week. The Contractor must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The Contractor must report all suspected or reported violations to the Federal awarding agency. The rate schedule for this project will be:

General Decision Number: MI20200075

State: Michigan

Construction Type: Heavy

County: Wayne County in Michigan.

The Contractor shall, pursuant to 40 CFR, Part 33, Subpart D, comply with the following fair share objectives for the Project:

Minority Business Enterprise (MBE): 10% Women Business Enterprise (WBE): 7.5%

The Contractor shall, pursuant to 40 CFR, Section 33.301, make the following good faith efforts whenever procuring construction, equipment, services and supplies under the Contract, and to require that such subcontractors also comply. Records documenting compliance with the following six good faith efforts shall be retained:

- 1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities, including placing DBEs on solicitation lists and soliciting them whenever they are potential sources, if applicable.
- 2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- 3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs, including dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process, if applicable.
- 4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- 5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- 6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (1) through (5) of this section.

Industry Rules and Codes

The successful bidder shall keep fully informed of all local, state, and federal laws, ordinances, and regulations. The successful bidder shall at all times observed and comply with such laws, ordinances and regulations which pertain to all materials, equipment, and employees.

Labor Laws and Ordinances

The Contractor shall obey and abide by all the laws of the State in which the work is being performed relating to the employment of labor on public work and all the laws and requirements of the Owner regulating or applying to public improvements.

Patents and Patent Rights

The Contractor shall protect and save the Owner harmless against all claims or actions brought against the Owner by reason of any actual or alleged infringement upon patent rights in any article, material, process, machine or appliance used by him in his work.

Guarantee

The Contractor shall guarantee all materials and workmanship for a period of one (1) year from the final acceptance of the completed work and shall repair, replace or make good any materials of work, which shall fail to function or perform or be found defective, without cost to the City. Contractor warrants and guarantees that the work will be in accordance with the Contract Documents and will not be

defective, and that title to all work, materials and equipment will pass to Owner free and clear of all liens.

Waiver of Lien

Upon completion of all work and request for final payment, the Contractor shall furnish a **full unconditional waiver of lien** from each supplier and sub-contractor covering all items of work. Failure to supply full unconditional waivers of lien for the entire job upon completion and final payment request will be considered grounds for withholding final payment.

Removal of Rubbish

The Contractor shall daily remove all rubbish and accumulated materials due to his/her construction.

Granting Agency Requirements

Construction work is being funded by the United States Environmental Protection Agency (EPA) through a Great Lakes Restoration Initiative (GLRI) grant. All construction contracts associated with this work are subject to specific terms and conditions that may not necessarily be standard in typical construction contracts.

Familiarity with Site

By providing a bid for the project, the Contractor acknowledges that he has visited the project site and understands the working conditions.

History of Fish Hatchery Park: Fish Hatchery Park was formerly a fish hatchery, with several large pools and structures constructed for the purpose of breeding and raising fish. Historic plans dated 1941 show these pools covering portions of the present-day pond, parking lot, tennis courts, and baseball diamonds. The fish hatchery was converted to a public park in 1968, and it is expected that concrete debris, building materials, and/or underground utilities were never removed from the site. The Contractor shall understand that this debris within five feet of the existing ground surface is likely to be encountered and will not be used as a basis to request additional funds.

Project/ Site Conditions

General: The project work is to occur in and along Johnson Creek and in the pond at Fish Hatchery Park. The proposed work is to be conducted on property owned by the City of Northville.

Base Survey: The Contract Documents reflect surveys and elevations at the work area as found in conditions surveys made as stated on the Drawings. The conditions shown are indicative of those that prevailed at the time of the site investigations and may be different than those at the time of construction. General locations of applicable existing utilities, vegetation, structures, equipment and improvements, based upon latest information available have been shown on the Drawings. However, it is the Contractor's obligation to establish the exact horizontal and vertical location and size of any and all existing utility lines which are located within the required work area. The Contractor shall submit a copy of its utility location findings prior to commencing work on the site. Any utility lines which are found by the Contractor shall be reported to the Owner's Representative immediately. The Owner's Representative will have the option of directing commencement of work at the site or requiring the Contractor to submit plans for locating the utility lines. If the Contractor damages any existing utility line, vegetation, structure, equipment or improvement, a report thereof shall be made immediately to the Owner's Representative. In any event, existing utility lines, vegetation, structures, equipment or improvements shall be protected from damage, and if damaged, shall be repaired by the Contractor at its own expense.

Subsurface and Physical Conditions: The following are documents that were used in the preparation of the Bidding Documents. The contents of these documents are considered "technical data":

- 1. Topographic Survey, Fish Hatchery Park, as prepared by Midwestern Consulting, Inc., dated November 9, 2018.
- 2. Environmental Data Report- Rouge River Area of Concern Johnson Creek Fish Hatchery Park Habitat Design Stream and Wetland Restoration, Northville Township, Michigan- as prepared by Somat Engineering, Inc., dated March 8, 2019

Water Elevations: The water surface elevation at the time of survey is shown on the Project Drawings. Water levels fluctuate. Contractor to use best available information to understand the conditions of the water levels.

Project Scheduling: Due to fish spawning and migration, no in-stream work shall occur between March 15 and June 15.

Working Within a River System: The Contractor understands and acknowledges that the performance of the work is required within the Rouge River system and floodplain and that the Rouge River water level fluctuates. The Contractor understands and acknowledges that they have taken into account the potential for any water level changes that might occur in costing, scheduling, and feasibility of performing the contract work under the prevailing environmental conditions. Therefore, the Contractor acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project is likely and does not constitute a change in conditions or an unforeseen site condition.

The Contractor shall be fully aware of the Rouge River hydrology and current weather conditions so that work in progress can be secured and protected at all times, so that safe job site working conditions are maintained, and so that soil erosion is controlled in accordance with all applicable permits and environmental laws.

The Contractor acknowledges that delays in the start of, or completion of, work due to fluctuations in the water level throughout the duration of the project shall not constitute a change in conditions nor shall be a basis for any extension of time or damages. If the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reasons of changing water levels, storms, inundation, or floods, the Contractor shall have no valid claim for damages, but shall in such case be entitled to an extension of time as the Engineer shall adjudge to be just and reasonable, provided that formal claim for an extension of time is made in writing by the Contractor within one week of the alleged delay.

The Engineer reserves the right to suspend work activities when it is in the best interest of the project to do so due to weather, flow, or water level conditions. The directive to suspend work activities shall be submitted to the Contractor in writing with justification. Such suspension shall not be basis for claim for additional cost but can be basis for extension of time.

The Contractor shall research available information and perform its own independent investigations as needed in an effort to fully understand environmental conditions associated with the project site. The Contractor shall understand the site conditions that will affect the cost, schedule, or performance of work in advance of starting such work.

Protection of Specific Species

Due to fish spawning and migration, no in-stream work shall occur between March 15 and June 15.

Indiana Bat: Any trees 3 inches DBH or larger is to be considered bat habitat. No trees of this size are to be cut between April 1 and September 30 in any year to avoid take of Indiana bat (*Myotis sodalis*), a federally listed endangered species, unless the tree is certified by a biologist not to be applicable habitat.

Eastern Massasauga Rattlesnake: Contractor to use wildlife safe materials for erosion control and site restoration (materials that do not incorporate plastic mesh or other similar material that could ensnare Easter Massasauga Rattlesnake (EMR)). Contractor and subcontractors onsite should watch MDNR's "60 Second Snakes: The Eastern Massasauga Rattlesnake" video and/or review the USFWS EMR Factsheet. Contractor must report any EMR observations, or observation of any other listed threatened or endangered species during project implementation to Engineer within 2 hours of the observation.

Special Environmental Protection Requirements

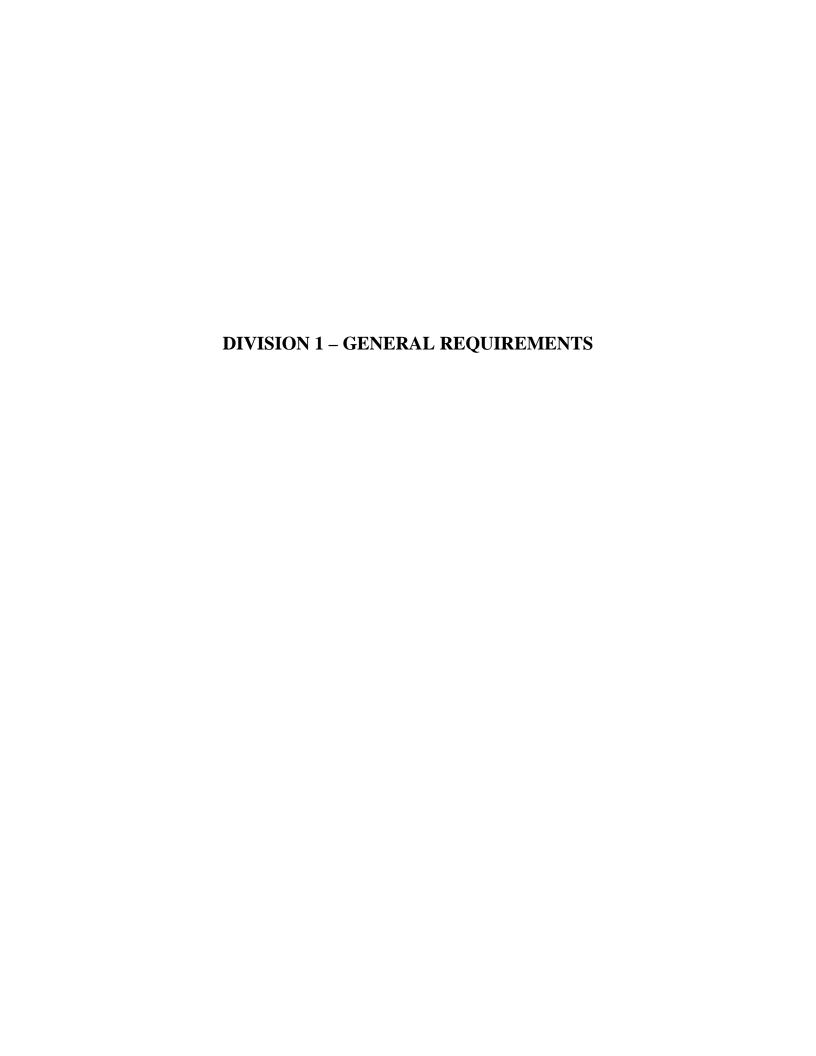
- 1. No ropes, cables, or guys shall be fastened to or attached to any tree(s) for anchorage unless specifically authorized by the Owner's Representative. Where such special use is permitted, the Contractor shall provide effective protection to prevent damage to the tree and other land and vegetative resources.
- 2. The Contractor shall confine all activities to areas defined by the Drawings and Specifications or as approved by Engineer. Except in areas indicated on the Drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without approval. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Soil, or other materials displaced into undisturbed areas shall be removed by the Contractor.
- 3. The Contractor shall conduct diligent operating practices to prevent the spread of Aquatic Nuisance Species (ANS) from one location to another on the Great Lakes, or from one water body to another. Such practices shall include, but not be limited to, cleaning equipment and watercraft (prior to it's being brought to the project site and prior to its removal when no longer needed at the site) to prevent the spread of seeds, eggs, larvae, soil, plant material, or other dispersal vectors; and discharging or exchanging ballast water or other water from a vessel of any type only at a location where the chances for survival of ANS are minimal, such as at cold, deep regions of the Great Lake which are far from shore.
- 4. Material placement, staging, and access shall occur only in those areas designated on the contract Drawings or as approved by Engineer. Staging operations shall be managed and controlled to prevent erosion of placed soil or sediment from entering nearby waters or wetlands. All staging shall be in areas designated on the Plans.
- 5. Disposal of any materials, waste, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to streams, rivers, or lakes and in areas not authorized for waste disposal shall not be permitted. If any waste material is dumped or placed in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, ground which has become contaminated through the fault or negligence of the Contractor shall be excavated, disposed of as directed by the Owner's Representative, and replaced

with suitable fill material compacted and finished with topsoil and planted as required to reestablish vegetation, all at the expense of the Contractor. Disposal of waste, trash and other materials off the project site shall be in accordance with all applicable Federal, State, and local laws, rules and regulations.

- 6. Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, ashes, sawdust, waste washings, herbicides and insecticides, rubbish or sewage, and other pollutants from entering public waters. Fueling and lubrication of equipment and plant shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants and waste oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with Federal, State, and local laws and regulations
- 7. Hazardous wastes are hazardous substances as defined in 40 CFR 261, or as defined by applicable State and local regulations. Hazardous waste generated by construction activities shall be removed from the work area and be disposed in compliance with Federal, State, and local requirements. The Contractor shall segregate hazardous waste from other materials and wastes, and shall protect it from the weather by placing it in a safe covered location; precautionary measures against accidental spillage such as berming or other appropriate measures shall be taken. Hazardous waste shall be removed from Owner-furnished property within 30 days. Hazardous waste shall not be dumped onto the ground, into storm sewers or open watercourses, or into the sanitary sewer system. A copy of the manifest shall be provided to the Owner's Representative for any hazardous waste disposed of under this contract.
- 8. Odors from all construction activities, processing and preparation of shall be controlled at all times and shall not cause a health hazard.
- 9. Ground vibrations from construction activities shall be controlled at all times to prevent damage.
- 10. The Contractor shall keep construction activities under surveillance and control to prevent excessive noise. Construction equipment shall be fitted with noise control devices should noise be deemed excessive.

Historical, Archeological, and Cultural Resources

If, during construction activities, items are observed that may have historic or archaeological value (e.g., human remains or associated objects, or artifacts are discovered), such items shall be protected in place and the observations shall be reported immediately to the Owner's Representative so that the appropriate agency may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to, or the destruction of, these resources. The Contractor shall prevent its employees from trespassing on, removing, or otherwise disturbing such resources.



SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

- A. The work of this Contract is located in and along Johnson Creek in the City of Northville, southeast of Seven Mile Road and west of Fairbrook Street.
- B. Work of this Contract is on land owned by the City of Northville.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to remove vegetation, establish access and staging, remove sediment, excavate, grade, install new substrates, revegetate, restore the project site, and all other work required as presented in contract documents.
- B. All work shall be in accordance with the Michigan Department of Environment, Great Lakes and Environment (EGLE), formerly the Michigan Department of Environmental Quality (MDEQ) Permit issued for this project. A copy of the permit is included in the contract documents.
- C. The Work includes, but is not necessarily limited to, the following items.
 - 1. Mobilization
 - 2. Acquire a soil erosion and control permit from the local authority
 - 3. Acquire any other permits required for the project.
 - 4. Development and Implementation of a Work Plan
 - 5. Development and Implementation of the following additional Technical Work Plans:
 - Health and Safety Plan
 - Soil Erosion and Sedimentation Control Plan
 - Traffic Control Plan
 - Access and Dewatering Plan
 - 6. Establish and maintain vertical and horizontal controls and construction staking to control lines and grades
 - 7. Clearing and grubbing of trees and brush with off-site disposal
 - 8. Establish temporary construction access
 - 9. Establish staging and dewatering containment areas
 - 10. Soil Erosion and Sediment Control
 - 11. Provide pedestrian control fencing and signage
 - 12. Protection of existing structures
 - 13. Grading and excavation

- 14. Removal of concrete wall
- 15. Installation of in-stream structures
- 16. Installation of floodplain benches
- 17. Installation of step pool structure
- 18. Sheet pile installation
- 19. Streambank stabilization measures
- 20. Sediment removal
- 21. Establishment of in-pond grades
- 22. Revegetation
- 23. Site restoration
- 24. Maintenance
- 25. Demobilization and closeout
- 26. All other items required to complete work as shown in the contract documents

D. Working Within a River System

- 1. The Contractor understands and acknowledges that the performance of the work is required within the Rouge River system and floodplain and that the Rouge River water level fluctuates. The Contractor understands and acknowledges that they have taken into account the potential for any water level changes that might occur in costing, scheduling, and feasibility of performing the contract work under the prevailing environmental conditions. Therefore, the Contractor acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project is likely and does not constitute a change in conditions or an unforeseen site condition.
- 2. The Contractor shall be fully aware of the Rouge River hydrology and current weather conditions so that work in progress can be secured and protected at all times, so that safe job site working conditions are maintained, and so that soil erosion is controlled in accordance with all applicable permits and environmental laws.
- 3. The Contractor acknowledges that delays in the start of, or completion of, work due to fluctuations in the water level throughout the duration of the project shall not constitute a change in conditions nor shall be a basis for any extension of time or damages. If the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reasons of changing water levels, storms, inundation or floods, the Contractor shall have no valid claim for damages, but shall in such case be entitled to an extension of time as the Engineer shall adjudge to be just and reasonable, provided that formal claim for an extension of time is made in writing by the Contractor within one week of the alleged delay.
- 4. The Engineer reserves the right to suspend work activities when it is in the best interest of the project to do so due to weather, flow, or water level

conditions. The directive to suspend work activities shall be submitted to the Contractor in writing with justification. Such suspension shall not be basis for claim for additional cost but can be basis for extension of time.

5. The Contractor shall research available information and perform its own independent investigations as needed in an effort to fully understand environmental conditions associated with the project site. The Contractor shall understand the site conditions that will affect the cost, schedule, or performance of work in advance of starting such work.

1.03 WORK SEQUENCE

- A. The Contractor shall adhere to the following general construction sequence unless otherwise proposed by Contractor and approved by Engineer. Contractor shall propose a detailed construction sequence in the required Work Plan.
- 1. Mobilize, install temporary construction fence around perimeter of Limits of Work/Disturbance, acquire necessary permits, and establish construction staking.
- 2. Establish access, staging, and sediment dewatering areas.
- 3. Clearing, grubbing, and tree removal as shown on the drawings.
- 4. Installation of sheet piling.
- 5. Isolation of stream flow, excavation, concrete wall removal, and construction of floodplain bench. Contractor to sequence work such that no more than 100 LF of incomplete floodplain bench is exposed at any time. Contractor to finish stabilization of floodplain bench section including seeding and erosion control blanket installation before moving on to next section.
- 6. Installation of instream structures.
- 7. Excavation and grading.
- 8. Pond sediment dredging and establishment of in-pond grades.
- 9. Complete revegetation.
- 10. Demobilize including removal of equipment, excess materials, construction debris, temporary fencing and gates, site cleaning and restoration, final seeding and restoration of areas disturbed by Contractor's demobilization, and removal of any traffic control devices/signage.
- 10. Maintenance.

1.04 CONTRACTOR'S USE OF PREMISES

- A. The CONTRACTOR shall restrict the stockpiling and storage to areas indicated on the plans or as directed by OWNER or ENGINEER.
- B. Access to the pond and stream shall be as indicated on the plans off of Seven Mile Road. Routing of internal construction traffic shall be at the CONTRACTOR'S discretion providing all construction traffic remains inside the Limits of Work/Disturbance.
- C. The CONTRACTOR shall maintain his construction operations including areas for field offices, staging, and storage of materials and equipment within the contract limits at locations approved by OWNER.
- D. The CONTRACTOR shall limit the use of premises for the work and shall coordinate the work with other contractors and OWNER.
- E. The CONTRACTOR is to apply for and obtain any requirements working within the MDOT Right-of-Way.
- F. The CONTRACTOR is to adhere to City of Northville and Northville Township tree ordinances.
- G. Park will be used for tennis and some baseball games between April 1 and October 11. CONTRACTOR is to accommodate public usage and traffic during that time.
- H. The CONTRACTOR is to provide safe access for public to tennis courts and baseball fields.
- I. The Park may be closed to the public between October 11 and April 1 and the entire lot may be used for staging.
- J. The CONTRACTOR will provide traffic signage for closures and pedestrian/public use.

1.05 COORDINATION

A. It shall be the responsibility of the CONTRACTOR to coordinate his operations and those of his subcontractors in such a manner so as to avoid interference and delays in the areas of common construction activities.

1.06 RIGHT-OF-WAY JURISDICTION

The CONTRACTOR shall secure any permits required by the agency having jurisdiction, shall abide by rules and regulations of each and pay all cost in connection with the permits. The CONTRACTOR shall pay for such permits, plan review, and inspection fees as the agencies may charge to insure compliance with their requirements.

- Soil erosion and sedimentation control
- Traffic control

• Any other local permit required to complete work

1.08 WORKS HOURS

- A. 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. Regular working hours are defined as Monday through Friday, excluding holidays, between the hours of 7:00 a.m. and 6:00 p.m. Requests to work other than regular working hours shall be submitted to Engineer, in writing, for approval not less than 48 hours prior to any proposed additional daily working hours (including second and third shifts), weekend work, or scheduled extended work weeks.
- B. Holidays are defined as the following:
 - New Years Day
 - Memorial Day
 - Independence Day
 - Labor Day
 - Thanksgiving Day
 - Christmas Day

SECTION 01020

ALLOWANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

This section details specific elements included in the allowances identified in the Bid form and in Section 01025, Measurement and Payment. The allowances shall be administered in accordance with the provisions of the General Conditions of the Contract. The CONTRACTOR shall be required to coordinate this work with the agency firm involved and pay all costs the agency firm may charge in connection with this work. If a markup is allowed on the allowance item, it will be identified so under that specific allowance. Thereafter, if the actual price for this work is more or less than the allowance, the Contract Price shall be adjusted accordingly by Change Order. The CONTRACTOR shall be responsible for all coordination with the Agency involved and for the timely completion of the Work to fit his schedule. The CONTRACTOR shall not be allowed any additional compensation for the failure of the Agency involved to meet any schedule.

1.02 RELATED WORK

- A. Bid Form.
- B. General Conditions of the Contract.
- C. Section 01010, Summary of Work.
- D. Section 01025, Measurement and Payment.

1.03 SPECIFIC ALLOWANCE ITEMS

A. Permanent Signage

The CONTRACTOR shall procure a sign as specified by the Owner and perform its installation at a location specified by the Owner. The CONTRACTOR will be reimbursed at cost plus 5% for the sign work performed.

B. Unforeseen Site Conditions

The CONTRACTOR will be paid for additional work required due to differing and/or unforeseen site conditions. The payment for these additional work items will be made based on lump sum or time and materials prices negotiated between the CONTRACTOR and the OWNER. In the event that unforeseen physical conditions should be encountered on the Project, this allowance item shall be used to remedy the situation. The CONTRACTOR shall comply with all provisions of the Contract Documents when encountering and contending with an unforeseen physical condition. The ENGINEER may require the CONTRACTOR to furnish a written report from a certified professional supporting his proposed scope and method for handling the unforeseen physical condition.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

This section describes the method of measurement and basis of payment for all items of work included in the Contract and listed in the Bid Form. The CONTRACTOR shall provide all labor, material, tools, equipment and services required to complete the Work as specified and as indicated on the Drawings. THE OWNER ONLY WILL PAY FOR ITEMS ON THE BID FORM, AND WILL MAKE NO PAYMENT FOR ITEMS NOT INCLUDED ON THE BID FORM.

1.02 RELATED WORK

- A. Bid Form.
- B. Section 01010, Summary of Work.
- C. Section 01240, Value Engineering Incentive.
- D. Section 01310, Work Plan.

1.03 PAYMENT ITEMS

ITEM NO. 1- Mobilization

Mobilization will be paid for at the Contract lump sum (LS) amount (not to exceed 5% of the total Contract Price). Price paid shall be payment in full for all labor, material, and equipment necessary for all preparatory work and operations, including but not limited to, the movement of personnel, equipment, supplies, and incidentals to the project site. Mobilization shall also include preconstruction costs, including permit fees and premiums for insurance and bonds, exclusive of bidding costs, which are necessary direct costs to the project and are of a generalized nature rather than directly attributable to other pay items under this Contract. This pay item shall also include all costs associated with De-Mobilization. This pay item shall include:

- the establishment of staging/storage areas and site access;
- the establishment of construction facilities and temporary controls;
- the establishment of access up to the active work area;
- obtaining and permit fee for all necessary SESC and/or other permits required for construction, including any Right-of-Way permit;
- furnish and installation of granting agency sign;
- preparation of work schedules and schedule-of-values, and preparation of submittals;
- other work and operations which must be performed or for expenses incurred, prior to

beginning work;

• all costs associated with De-Mobilization.

Payment for mobilization will be based upon the following schedule:

Partial Payment Schedule

Percentage of Total Contract Price Earned	Percentage of Bid Price for Mobilization Allowed
5	50
10	75
25	100

ITEM NO. 2- Site Preparation

Site Preparation will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material, and equipment required for site preparation in the project area. Price paid shall include but is not limited to:

- removing, stockpiling, and replacing parking bumper blocks (approx. 70 total);
- removing, stockpiling, and replacing existing boulder (1 total);
- removing, stockpiling, and replacing existing benches (2 total); and
- all other items required to complete work.

ITEM NO. 3- Audio Visual Recording

Audio Visual Recording will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, materials and equipment required for the audiovisual tape recording of the project area prior to the start of Work. The Contractor to determine areas within project vicinity to be recorded to document existing conditions prior to construction. Areas that may be included are: Johnson Creek, Fish Hatchery Pond, pond outlet, pedestrian bridge area, woody debris, parking lot, signs, handrails, or any other improvements within the vicinity of the project work.

ITEM NO. 4- Construction Staking

Construction Staking will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for establishing staking and maintaining staking (horizontal and vertical control) in the project area. Contractor may utilize wireless integrated dredge positioning technology, such as "ClamVision" or similar to control and record work progress at pond dredging. All other staking/control required shall be considered incidental and shall be included in the lump sum price.

ITEM NO. 5- Traffic Control

Traffic Control will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required to complete work. Price paid shall include but is not limited to:

- acquisition of any permits required;
- labor, material and equipment for the traffic control on Seven Mile Road as well as

potential vehicle and pedestrian traffic in the park as required for the project work;

- compliance with areas and notes as shown on the project drawings;
- preparation and submission of traffic control plan for approval prior to start of work in accordance with the Michigan Department of Transportation Manual on Uniform Traffic Control Devices:
- preparation and submission of pedestrian traffic control plan for approval prior to start of work:
- coordination with Owners;
- abiding by any jurisdictional requirements;
- acquiring, installing, and maintaining construction fencing and signs, and removal at end
 of project;
- all other items required to complete work.

ITEM NO. 6- Soil Erosion and Sedimentation Control

Erosion and Sediment Control will be paid for at the Contract lump sum (L.S.) basis. Price paid shall be payment in full for all labor, material and equipment required to install and maintain soil erosion and sediment control measures to the extents shown on the Drawings and shall include, but is not limited to:

- compliance with permits;
- acquiring, installing, and maintaining catch basin insert as shown on Drawings;
- acquiring and delivering barrier material to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- installing controls at locations shown on Drawings and as required to provide site control;
- maintaining controls throughout duration of project;
- removal of measures after completion of restoration project, and;
- all other items necessary to complete the work.

ITEM NO. 7- Water Control

Water control will be paid for at the Contract lump sum (L.S.) basis. Price paid shall be payment in full for all labor, material and equipment required to complete the work for dewatering as shown in Drawings and shall include but is not limited to:

- dewatering area adjacent to stream for construction of floodplain benches including installation of Vegetated Mechanically Stabilized Earth soil lifts and wood toe;
- dewatering for pond dredging;
- filtering of water from dewatering activities prior to release into Johnson Creek;
- removal of dewatering materials at close of project; and
- all other items necessary to complete the work.

ITEM NO. 8- Tree Removal 6-12" DBH

Tree Removal 6-12" DBH will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for the removal of trees with a DBH of 6-12" as shown in Drawings and shall include but is not limited to:

• removal of existing trees with a DBH of 6-12" at locations shown on the Drawings;

- disposal off-site as approved by the ENGINEER, or stockpile for use in Vegetated Mechanically Stabilized Earth as approved by ENGINEER, and;
- all other items necessary to complete the work.

ITEM NO. 9- Tree Removal >12" DBH

Tree Removal >12" DBH will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for the removal of trees with a DBH greater than 12" as shown in Drawings and shall include but is not limited to:

- removal of existing trees with a DBH greater than 12" at locations shown on the Drawings;
- disposal off-site as approved by the ENGINEER, or stockpile for use in Vegetated Mechanically Stabilized Earth as approved by ENGINEER, and;
- all other items necessary to complete the work.

ITEM NO. 10- Bat Habitat Felling

Bat Habitat Felling will be paid for on a Contract lump sum (L.S.) basis. Price paid will be for felling and removal of potential bat habitat trees (Tag Number 133, 147, 148, and untagged tree on opposite side of Johnson Creek as shown on Drawings). Price paid shall include, but is not limited to the following:

- coordinate with ENGINEER to oversee felling of tree according to Fish and Wildlife Service requirements;
- removal of existing tree;
- disposal off-site as approved by the ENGINEER, and;
- all other items required to complete this work.

ITEM NO. 11- Clearing

Clearing will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurement of area cleared and approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for clearing, grubbing, chipping, hauling, and offsite disposal or stockpile for use in VMSE as approved by ENGINEER. The cost of removing and for hauling and disposal of trees, brush and woody vegetation removed shall be included in the price.

ITEM NO. 12- Access Route

Access route will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for constructing, maintaining, and removal of the temporary access route, and shall include but is not limited to:

- establishing access from Seven Mile Road;
- establishing access along Johnson Creek as shown on the drawings;
- installation of rock for access route;
- maintenance of access route throughout the project;
- complete removal of access materials at the end of construction; and
- all other necessary items to complete the work.

ITEM NO. 13- Pond Access

Pond access will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for constructing, maintaining, and removal of access for pond dredging, and shall include but is not limited to:

- establishing access to dredging areas;
- maintenance of access route throughout dredging;
- complete removal of access materials at the end of construction; and
- all other necessary items to complete the work.

ITEM NO. 14- Concrete Wall Removal

Concrete Wall Removal will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material and equipment required for concrete wall removal, and shall include but is not limited to:

- removing concrete wall after floodplain bench is constructed in accordance with sequencing requirements described in Drawings;
- disposal off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 15- Woody Debris Removal

Woody Debris Removal will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for woody debris removal, and shall include but is not limited to:

- removing woody debris and log jam as shown on Drawings;
- disposal of woody debris off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 16- Outlet Rubble Removal

Outlet Rubble Removal will be paid for at the Contract unit weight (TONS) amount. Measurement shall be based on weight of removed concrete rubble as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for rubble removal near the existing pond outlet, and shall include but is not limited to:

- removing concrete rubble and debris at existing pond outlet within five feet (horizontally and vertically) of proposed work for installation of proposed outlet weir and step pool, as shown on Drawings;
- disposal off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 17- Chain Link Fence Removal

Chain Link Fence Removal will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for chain link fence removal, and shall include but is not limited to:

- removal and disposal of chain link fence posts (80 total) as approved by ENGINEER;
- disposal of stockpiled chain link fence off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 18- Baseball Diamond Relocation

Baseball Diamond Relocation will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for relocation of the baseball diamond, and shall include but is not limited to:

- relocating the south baseball diamond as shown on Drawings;
- relocating metal bleachers as directed by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 19 – Dewatering Containment Area

Dewatering containment area will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for constructing, maintaining, and removal of the dewatering containment area and shall include but is not limited to:

- acquiring and delivering straw bales, impermeable barrier, silt fence, stone, filter fabric and other materials needed to construct the dewatering containment area to site;
- constructing dewatering containment area as shown on Drawings;
- full area to be lined with impermeable barrier for hydraulic dredging;
- sides of area only to be lined with impermeable barrier for mechanical dredging;
- lined chute to be installed for hydraulic dredging;
- multiple rows of silt fence with straw bales to be installed for mechanical dredging;
- maintaining dewatering containment area as needed;
- complete removal of materials associated with the dewatering containment area at the end of construction; and
- all other necessary items to complete the work.

ITEM NO. 20- Johnson Creek Grading/Excavation

Johnson Creek Grading/Excavation will be paid for at the Contract unit volume (C.Y.) amount. Price paid shall be payment in full for all labor, material and equipment required for grading/excavation, and shall include but is not limited to:

- isolating streambank from flow before excavation of floodplain, installing and maintaining turbidity curtain as indicated on the Drawings;
- excavating/grading in and around Johnson Creek, in accordance with sequencing requirements described in Drawings, to meet proposed grades for the floodplain bench, slopes, point bar removal, and other proposed grades as shown on Drawings;
- disposal of excess material offsite in a Type II landfill; and
- all other necessary items to complete the work.

ITEM NO. 21- Vegetated Mechanically Stabilized Earth (VMSE)

VMSE will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material and equipment required for constructing VMSE soil lifts and wood toe, and shall include but is not limited to:

- isolating streambank from flow before construction;
- acquiring and delivering woody material, 1x3" limestone, live brush layers, Erosion Control Blanket C125BN, and Coir Mat 70 to the site;
- constructing the VMSE, in accordance with sequencing requirements described in Drawings;

• all other necessary items to complete the work.

ITEM NO. 22- Rock Vanes

Rock Vanes will be paid for at the Contract unit price (E.A.) basis. Price paid shall be payment installation of rock vanes, including but not limited to;

- acquiring and delivering limestone slab and unscreened natural sand to site;
- installation of rock vanes as shown on Drawings; and
- all other items necessary to complete this item.

ITEM NO. 23- Fish Hatchery Pond Dredging

Dredging will be paid for at the Contract unit volume (C.Y.) amount. Price paid shall be payment for all labor, material, and equipment required to remove sediment as shown on the Drawings. It also includes, but is not limited to;

- conducting a pre-dredging survey and comparison to existing conditions provided in the contract documents;
- establishing and maintaining site controls;
- in-pond access to material to be removed;
- dewatering of dredged material within the dewatering containment area, as needed;
- removal of native material as shown on Drawings;
- disposal of native material offsite in a Type II landfill as approved by the ENGINEER;
- bathymetric survey near dredging completion for approval by the ENGINEER; and
- all other items necessary to complete this item.

ITEM NO. 24- Sheet Pile

Sheet Pile will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material, and equipment required to install sheet pile as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering sheet pile to the site;
- notifying Engineer one week prior to driving sheet pile, providing Engineer with tentative driving schedule, confirming schedule with Engineer 48 hours prior to installation of sheet pile, and providing weekly update on driving schedule until all sheeting has been installed;
- installing sheet pile at locations shown on Drawings;
- acquiring and installing sheet pile cap;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 25- Void Filling

Void filling will be paid for at the Contract unit volume (C.Y.) amount. Price paid shall be payment in full for all labor, material, and equipment required to fill voids as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- filling voids at locations shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 26- Sheet Pile to Concrete Connection

Sheet Pile to Concrete Connection will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material, and equipment required to connect sheet pile to existing concrete headwall of the pedestrian bridge as shown on the Drawings and shall include, but is not limited to:

- submitting sketch of connection to ENGINEER for approval prior to connection;
- acquiring and delivering materials to the site;
- bolting angle or plate section to concrete and welding to sheet piling at locations shown on Drawings; and
- all other items necessary to complete the work.

ITEM NO. 27- Pond Outlet Structure

Dredging will be paid for at the Contract lump sum basis (L.S.). Price paid shall be payment installation of pond outlet structure, including but not limited to;

- installation of pond outlet structure as shown on Drawings;
- coordination with elevations of the step pools as shown on Drawings; and
- all other items necessary to complete this item.

ITEM NO. 28- Handrail

Handrail will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material, and equipment required to install sheet pile as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering handrail to the site;
- installing handrail at locations shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 29- Step Pools

Step Pools will be paid for at the Contract unit length (L.F.) basis. Price paid shall be payment in full for all labor, material and equipment required for the installation of step pools, including but not limited to;

- excavation/grading for step pools and proposed grades of surrounding areas as shown on Drawings;
- acquiring and delivering limestone slabs, 6A gravel, 4x6" cobble, and natural sand to site;
- placement of limestone slabs, 6A gravel, 4x6" cobble, and natural sand as shown on Drawings;
- installation of additional reinforcing 4x6" cobble as shown on Drawings; and
- all other items necessary to complete this item.

ITEM NO. 30- 4-8" Stone

4-8" Stone will be paid for at the Contract unit volume (C.Y.) price basis. Measurement shall be based on in field measurements of installed 4-8" stone and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install 4-8" stone as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering 4-8" stone to the site;
- acquiring and delivering non-woven geotextile to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- installing non-woven geotextile and 4-8" stone at approximate locations shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 31- Sediment Capture Area

Sediment Capture Area will be paid for at the Contract unit area (S.F.) basis. Price paid shall be payment in full for all labor, material and equipment required for construction of sediment capture area as shown on Drawings and shall include but is not limited to:

- excavation, grading, and legal disposal off site;
- acquiring and hauling nonwoven geotextile fabric, peagravel, sand, topsoil, erosion control blanket S75BN, and river rock to the site as needed;
- placement of nonwoven geotextile fabric, peagravel, sand, topsoil, erosion control blanket S75BN, and river rock as shown on Drawings, and;
- all other items necessary to complete the work.

ITEM NO. 32- Live Stakes

Live Stake Installation will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on Contract Drawings and installation approved by the ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install live stakes at the spacing and to the extents shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering live stakes to the site;
- acquiring approval of delivered stock from the ENGINEER prior to installation;
- acquiring approval for alternate species from the ENGINEER prior to installation;
- installing live stakes at approximate spacing and locations shown on Drawings and as approved by ENGINEER;
- installing live stakes using commonly accepted practices; and
- all other items necessary to complete work.

ITEM NO. 33- Emergent Plantings

Emergent Plantings will be paid for at the Contract unit price (EA) basis. Measurement shall be based on Contract Drawings and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install the emergent plantings at the spacing and to the extents shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering emergent planting material to the site;
- acquiring approval for alternate species from ENGINEER prior to installation;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- installing plantings at approximate spacing and locations shown on Drawings;
- installing plugs using commonly accepted practices;
- 2-year warranty;
- Final weeding prior to end of 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 34- Shrubs

Shrubs will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on the count of installed shrubs and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install shrubs as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering shrubs to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- acquiring approval for alternate species from ENGINEER prior to installation;
- installing shrubs at approximate locations shown on Drawings
- installing shrubs using commonly accepted horticultural practices;
- 2-year warranty;
- all other items necessary to complete the work.

ITEM NO. 35- Trees: 2.5"

Trees: 2.5" will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on the count of installed trees greater than or equal to 2.5 caliper inches and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install trees as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering trees to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- acquiring approval for alternate species from ENGINEER prior to installation;
- installing trees at approximate locations shown on Drawings
- installing trees using commonly accepted horticultural practices;
- coordination with grading, topsoil placement, and erosion control blanket installation;
- 2-year warranty;
- all other items necessary to complete the work.

ITEM NO. 36- Trees: 1 gal.

Trees: 1 gal. will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on the count of installed 1 gallon containerized trees and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install trees as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering trees to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- acquiring approval for alternate species from ENGINEER prior to installation;
- installing trees at approximate locations shown on Drawings
- installing trees using commonly accepted horticultural practices;
- coordination with grading, topsoil placement, and erosion control blanket installation;
- 2-year warranty;
- all other items necessary to complete the work.

ITEM NO. 37- Native Seed

Native Seed will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed to the extent shown

on the Drawings and using specified seed mixes and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- use of acceptable hydro-mulch applied at the specified rate;
- application of specified seed mixes within the correct zones;
- application of specified seed mixes at the specified seeding rates;
- coordination with topsoil and erosion control blanket placement;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 38- Turf Seed

Turf Seed will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed to the extent shown on the Drawings and using specified seed mixes and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- use of acceptable SB75 straw mulch, blown and crimped straw, or hydro-mulch applied at the specified rate;
- application of specified seed mixes within the correct zones;
- application of specified seed mixes at the specified seeding rates;
- coordination with topsoil and erosion control blanket placement;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 39- Topsoil

Topsoil will be paid for at the Contract unit volume (C.Y.) price basis. Measurement shall be based on field measurements of volume of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install topsoil to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering topsoil to the site;
- installing topsoil to a depth of 4" on all disturbed areas;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 40- Erosion Control Blanket: C125BN

Erosion Control Blanket: C125BN will be paid for at the Contract unit area (S.Y.) price basis. Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install C125BN erosion control blankets to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation according to the manufacturer's instructions including appropriate overlaps and grade tie-ins;
- providing and installing stapling according to manufacturer's instructions; and
- all other items necessary to complete the work.

ITEM NO. 41- Erosion Control Blanket: S75BN

Erosion Control Blanket: S75BN will be paid for at the Contract unit area (S.Y.) price basis.

Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install S75BN erosion control blankets to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation according to the manufacturer's instructions including appropriate overlaps and grade tie-ins;
- providing and installing stapling according to manufacturer's instructions; and
- all other items necessary to complete the work.

ITEM NO. 42- Parking Lot Restoration

Parking Lot Restoration will be paid for at the Contract lump sum (L.S.) price basis. Measurement shall be based on field measurements of installed work. Price paid shall be payment in full for all labor, material and equipment required for the restoration of the existing gravel parking lot as directed by ENGINEER. This shall include, but is not limited to:

- furnish and install gravel, as needed to comply with Drawings;
- replacing stockpiled parking bumper blocks (approx. 70 total);
- all other items necessary to complete the work.

ITEM NO. 43- Site Restoration

Site Restoration shall be paid for on a Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required to perform completion of site restoration within the Limits of Work/Disturbance shown on the Drawings or as directed by the ENGINEER and shall include, but is not limited to:

- replacement of stockpiled benches (2 total);
- restoration of existing pavement;
- restoration of existing curb and gutter;
- restoration of damaged utilities;
- restoration of any other structures;
- restoration of vegetated areas used for access and staging to original grade;
- placement of blown and crimped straw, erosion control blanket S75BN, or hydromulch in areas used for access and staging to facilitate restoration of existing vegetation types; and
- all other items necessary to complete the work.

ITEM NO. 44- As-Built Survey and Drawings

As-Built Survey will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for the providing an as-built survey and certified as-built documents on a monthly basis for floodplain bench and pond dredging work and of the complete project following the completion of Work. Monthly data may be submitted digitally in pdf and AutoCAD file formats. As-built documents shall include 1 copy of marked up field drawings, 3 copies of certified as-built drawings by a professional surveyor, and 1 copy digital AutoCAD file containing as-built survey data. The base survey will be provided to the Contractor by the ENGINEER.

ITEM NO. 45- Vegetation Maintenance

Vegetation Maintenance will be paid for at the Contract unit price (MON) amount. Price paid

shall be payment in full for all labor, material, and equipment required for remedying conditions during the growing season and shall include, but is not limited to:

- watering as required by site conditions and specifications and maintenance required for revegetation during extent of project;
- weeding and maintenance at a minimum once a month during growing seasons;
- installation, maintenance, and removal of protection materials to protect trees against damage due to deer antler rub;
- removal and replacement of unhealthy plant materials;
- replacements as required to meet performance criteria;
- invasive species removal;
- all other items necessary to complete the work.

ALLOWANCES

ITEM NO. 46- Permanent Signage

Permanent Signage will be paid for at the actual cost as invoiced by the sign manufacturer plus 5%. Price paid shall be payment for all labor, material, and equipment required for furnishing and installation of the permanent sign.

ITEM NO. 47- Unforeseen Site Conditions

Unforeseen Conditions will be paid for at the Contract lump sum (L.S.) amount after the Work has been authorized by the ENGINEER. This may include one individual work item or a collection of items at a negotiated price. This may include no items, one individual occurrence or multiple occurrences. Price paid shall be payment in full for all labor, material, and equipment required for remedying the conditions and shall be based upon an agreement negotiated and approved price prior to beginning this Work.

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. All progress payments shall conform with the General conditions.
- B. The CONTRACTOR shall submit draft Applications for Payment to the ENGINEER one week prior to final submittal for review along with a draft schedule
- C. Applications for Payment shall be consistent with previous applications and payments as certified by the ENGINEER and paid for by the OWNER.
- D. Payment Application Forms: Use form for Applications for Payment as approved by the ENGINEER in advance.
- E. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- F. After approval of draft, submit and three executed original copies of each Application for Payment to the ENGINEER.
- G. Administrative actions and submittals that must precede or coincide with submittal of the final application for payment shall be in accordance with the Contract Documents.
- H. Finalized Application for Payments packages shall include:
 - 1. Application for Payment, notarized and executed;
 - 2. As used, running sub-line items for Unforeseen Allowance Line;
 - 3. Invoices for on-site stored materials;
 - 4. Invoices, documentation and proof of insurance for off-site stored materials;
 - 5. Invoices for payment under Allowance items where contractor is reimbursed for actual cost of invoice plus 5%;
 - 6. Contractor Declaration;
 - 7. Waiver of Lien from all subcontractors, sub-subcontractors and suppliers;
 - 8. Completed MBE/WBE form;
 - 9. Updated schedule.

1.02 RELATED WORK

- A. Bid Form.
- B. General Conditions.
- C. Supplementary Conditions.
- D. Section 01310, Work Plan.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

SECTION 01040

COORDINATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall coordinate work under this Contract with operation and maintenance activities carried out by OWNER.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01300, Submittals.
- C. Section 01310, Work Plan.
- D. Section 01700, Contract Closeout.

1.03 GENERAL PROVISIONS

- A. Cooperate with OWNER in the use of the site for parking, storage areas, and traffic.
- B. During construction, coordinate use of site and facilities through the ENGINEER.
- C. Comply with the ENGINEER's procedures for Project communications, submittals, reports and records, schedules, and coordination drawings.
- D. Comply with instructions of OWNER for use of temporary utilities.
- E. Coordinate scheduling, and submittals, to assure efficient and orderly sequence of the Work.
- F. Coordinate sequence of Work to accommodate OWNER occupancy.
- G. In addition to progress meetings specified in Section 01200, hold coordination meetings and pre-construction conferences with personnel and subcontractors to assure coordination of the Work. The ENGINEER shall be informed of these meetings in advance.
- H. Assemble and coordinate closeout submittals specified in Section 01700.

PART 2 PRODUCTS (NOT USED)

PROJECT MEETINGS

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PART 1	GENERAL

1.01 SCOPE OF WORK

- A. Preconstruction conference.
- B. Progress meetings.

1.02 RELATED WORK

- A. General Conditions: Contractor's use of site; safety procedures; payments; claims; change orders.
- B. Section 01010, Summary of Work
- C. Section 01300, Submittals.
- D. Section 01310, Work Plan.
- E. Section 01400, Quality Control.
- F. Section 01500, Construction Facilities and Temporary Controls.
- G. Section 01570, Traffic Control
- H. Section 01600, Delivery, Storage, and Handling.

1.03 PRECONSTRUCTION CONFERENCE

A. Following the Notice of Award, the ENGINEER will schedule a preconstruction conference.

1.04 PROGRESS MEETINGS

- A. Weekly progress meetings will be scheduled.
- B. Attendance (as needed): CONTRACTOR, project superintendent, subcontractors, and suppliers, appropriate to agenda; the OWNER, his representatives, and consultants as appropriate.
- C. Minimum Agenda:
 - 1. Progress of Work in relation to schedule.
 - 2. CONTRACTOR's marked-up schedule.
 - 3. CONTRACTOR's payment estimate.

- 4. Work progress and performance.
- 5. Field observations, problems, and conflicts.
- 6. Off-site and on-site fabrications, inspections and delivery schedules.
- 7. Corrective measures and procedures to regain projected schedule.
- 8. Planned progress and schedule during succeeding work period.
- 9. Coordination of schedules.
- 10. Submittals required.
- 11. Maintenance of quality standards.
- 12. Proposed changes; effect on construction schedule.
- Any other appropriate items or subjects which require the attention and attendance of the CONTRACTOR with regard to the progress of the Work.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

VALUE ENGINEERING INCENTIVE

PART 1 GENERAL

1.01 DESCRIPTION

This Section defines a Value Engineering Incentive Proposal and establishes procedures and policies for sharing Value Engineering savings between the OWNER and the CONTRACTOR.

1.0.2 DEFINITIONS

A. Value Engineering Incentive Proposal: A formally written Proposal from the CONTRACTOR for a change in scope, materials, methods, techniques, procedures, etc., during the construction of a Project, which results in a savings to the Project while maintaining the design intent, function, serviceability, durability, longevity, etc.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. The Value Engineering Incentive Proposal must result in a net capital cost reduction while causing no increase in the total life cycle cost of the Project (i.e., shall not increase overall operation and maintenance costs or decrease life of project).
- B. The function, reliability, and safety of the Project shall be maintained.
- C. The proposed change shall not result in any Contract rebidding.
- D. The proposed change shall be in compliance with all applicable laws, regulations, ordinances, and permits of all local, federal, and state agencies.
- E. The proposed change shall result in a gross savings of at least \$10,000.00 to be considered for Value Engineering Incentive sharing.

3.02 SUBMITTING PROPOSAL

The Value Engineering Incentive Proposal shall contain all pertinent information and supporting documentation for evaluation by the ENGINEER. As a minimum, the following information shall be included:

A. Name of CONTRACTOR, subcontractors, suppliers, or others associated with the proposed change and preparation of the Value Engineering Incentive Proposal.

- B. A detailed description with plans and specifications of the present design and proposed changes. Designs shall be signed and sealed by a registered Professional Engineer.
- C. Clear identification of any advantages and disadvantages for each change proposal.
- D. A detailed procedure and schedule for implementing the proposed change. This shall include confirmation from suppliers of availability and proposed delivery dates of materials and equipment.
- E. All necessary Contract Change Order information and significant dates for implementation.
- F. A detailed listing of Project construction costs before (original construction cost as bid) and after the proposed change, broken down by trade and/or subcontractor. Markups for overhead and profit shall be equivalent to the markups included in the original Proposal submitted with the CONTRACTORs bid unless such markups are not in accordance with the Conditions of the Contract. The original as bid construction cost and the new construction cost shall be supported. Construction costs shall include, as a minimum, the following:
 - 1. Detailed listing of quantities of materials and equipment
 - 2. Unit prices of materials and equipment
 - 3. Labor hours and hourly rates for installation labor
 - 4. Detailed listing of equipment and equipment rates used in the installation
 - 5. Subcontractor and CONTRACTOR markups
 - 6. Permit fees and license costs
 - 7. Miscellaneous costs not included above with supporting documentation
- G. Operation and maintenance costs before and after the Value Engineering Change.
- H. Other costs for implementing the proposed change not included above.
- I. Other data required for funding approvals as may be required by funding agencies.
- J. Time required for executing the proposed change including time savings or time extensions if required.

3.03 REVIEW OF VALUE ENGINEERING CHANGE PROPOSAL

The OWNER may modify, accept, or reject the proposed change. However, if the proposed change is modified or is not acted upon within the time frame specified in the Value Engineering Incentive Proposal, the CONTRACTOR may withdraw in whole or in part, the Value Engineering Incentive Proposal. In any event, the OWNER and ENGINEER shall not be liable for any costs associated with development and submittal of the Value Engineering Incentive Proposal.

- A. The ENGINEER shall review all aspects of the Value Engineering Incentive Proposal and make a separate analysis of the costs, benefits, disadvantages, maintenance and operating costs, and life cycle costs based upon the design intent. The ENGINEER shall then make a recommendation, to the OWNER, based upon this review. Such recommendation shall accept or reject the Value Engineering Incentive Proposal in whole or in part, or recommend modifications to the proposal, accompanied by such supporting documentation as is necessary to support the recommendation.
- B. The OWNER shall accept or reject the Value Engineering Incentive Proposal in whole or in part or offer modifications to the proposal for consideration of the CONTRACTOR.
- C. The CONTRACTOR shall accept or reject the Value Engineering Incentive Proposal as accepted by the OWNER or may counteroffer modifications to the proposal for the ENGINEER's review and OWNER's consideration.
- D. The ENGINEER shall record all costs for review on a time and materials basis. Such costs shall be deducted from the Value Engineering savings.

3.04 ACCEPTANCE OF VALUE ENGINEERING INCENTIVE PROPOSAL

Upon mutual acceptance of the Value Engineering Incentive Proposal by the OWNER and CONTRACTOR, the CONTRACTOR will share in the net savings based upon the following formula.

\$ (initial construction cost)
-\$ (revised construction cost)

- \$ (Value Engineering Savings) = (\$10,000.00 or greater)
- -\$ (ENGINEER's review costs)
- \$ (net Value Engineering Savings)
- \$ (net Value Engineering Savings) x 50% = CONTRACTOR's share in savings

When approved, the CONTRACTOR's share in the Value Engineering Incentive savings shall be reimbursed by an approved Change Order which shall also be authorization to proceed with the proposed change.

SUBMITTALS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the requirements for the following submittals: Shop Drawings, Product Data, Samples, Construction Photographs, and Construction and Shop Drawing Submittal Schedules.
- B. All submittals shall be clearly identified by reference to Section Specification number, Paragraph, and Drawing number as applicable. Submittals shall be clear and legible and of sufficient size for clear presentation of data.

1.02 RELATED WORK

- A. Section 01200, Project Meetings.
- B. Section 01310, Work Plan.
- C. Section 01330, Construction Staking.
- D. Section 01400, Quality Control
- E. Section 01540, Health and Safety Plan
- F. Section 01570, Traffic Control.
- G. Section 01700, Contract Closeout.
- H. Section 02220, Soil Erosion
- I. Section 02300, Earthwork
- J. Section 02411, Metal Sheet Piling
- K. Section 02622, Erosion Control Blankets
- L. Section 02930, Landscaping

1.03 SHOP DRAWINGS, PRODUCT DATA, SAMPLES, TECHNICAL WORK PLANS

A. Shop Drawings

- 1. Shop drawings as specified in individual Specification Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.
- 2. All shop drawings submitted by subcontractors for approval shall be sent directly to the CONTRACTOR for checking. The CONTRACTOR shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 3. Check all subcontractor's shop drawings regarding measurements, size of members,

materials and details to make sure that they conform to the intent of the Drawings and related Specification Sections. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

4. All details on shop drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the shop drawings before being submitted for approval.

B. Product Data

1. Product data as specified in individual Specification Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

- 1. Samples specified in individual Specification Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the ENGINEER or OWNER for independent inspection and testing, as applicable to the work.
- D. The following Technical Work Plans shall be developed by the CONTRACTOR prior to initiating the Work covered by the Technical Work Plans. The Plans shall be submitted for review and approval and shall include: descriptions of CONTRACTOR's proposed means and methods; materials, products, and equipment data; assumptions, design data, and calculations; sketches, and fabrication and working drawings, sequence of work; and contingency plans. All designs and calculations included in the Plans shall be stamped by a Professional Engineer registered in the State of Michigan.
 - 1. Work Plan
 - 2. Soil Erosion and Sedimentation Control Plan
 - 3. Traffic Control Plan
 - 4. Dredging Plan
 - 5. Metal Sheet Piling Plan
 - 6. Revegetation Plan

1.04 CONTRACTOR'S RESPONSIBILITIES

- A. The CONTRACTOR shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
 - 4. Conformance with related Sections
- B. Each shop drawing, sample and product data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement including the CONTRACTOR's company name and signed by the CONTRACTOR: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. The CONTRACTOR shall provide to the Resident Project Representative a copy of each submittal transmittal sheet for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the ENGINEER.
- C. Project work, materials, fabrication, and installation shall conform to approved shop drawings, applicable samples, and product data.

1.05 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work.
- B. Each submittal, appropriately coded, will be returned within 30 calendar days following receipt of submittal by the ENGINEER.
- C. Any delays due to submittals, revisions, and/or resubmittals shall be borne by the Contractor and will not be cause for extension of time nor additional payment. The Contractor shall submit all submittals with sufficient time in advance of construction activities to avoid any delays.
- D. Number of submittals required:

- 1. Shop Drawings: Three copies.
- 2. Product Data: Three copies.
- 3. Samples: Submit the number stated in the respective Specification Sections.

E. Submittals shall contain:

- 1. The date of submission and the dates of any previous submissions.
- 2. The Project title and number.
- 3. Contractor identification and certification.
- 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
- 5. Identification of the product, with the Specification Section number, page and paragraph(s).
- 6. Field dimensions, clearly identified as such.
- 7. Relation to adjacent or critical features of the Work or materials.
- 8. Applicable standards (such as ASTM, MDOT, or Federal Standards numbers.)
- 9. Identification of deviations from Contract Documents.
- 10. Identification of revisions on resubmittals.
- 11. A blank space suitably sized for ENGINEER stamp.

1.06 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, TECHNICAL WORK PLANS WORKING DRAWINGS AND SAMPLES

- A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;
 - 3. as approving departures from details furnished by the ENGINEER, except as

otherwise provided herein.

- B. The CONTRACTOR remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Total Contract Price or Contract Time, the ENGINEER may return the reviewed drawings without noting an exception.
- D. Submittals will be returned/noted to the CONTRACTOR as:
 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.
 - "APPROVED AS NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 - "APPROVED AS NOTED/RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within [15] calendar days of the date of the ENGINEER's transmittal requiring the resubmittal.
 - "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.
 - "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the CONTRACTOR.
- E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the CONTRACTOR shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.

- F. Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR and will be considered "Not Approved" until resubmitted. The ENGINEER may at his/her option provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete.
- G. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give written notice thereof to the ENGINEER at least 7 working days prior to release for manufacture.
- H. When the shop drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

1.07 DISTRIBUTION

A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the ENGINEER. Number of copies shall be as directed by the ENGINEER but shall not exceed six (6).

1.08 SHOP DRAWING SUBMITTAL SCHEDULE

- A. Provide shop drawing submittal schedule required in Specification Section 01310, Work Plan.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

WORK PLAN

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall submit a Work Plan demonstrating fulfillment of all Contract requirements. The Work Plan shall be kept up to date in accordance with the requirements of this Section. The Work Plan shall be utilized for planning, scheduling, coordinating, and monitoring Work under this Contract, including but not limited to all activities of subcontractors, equipment vendors, suppliers, and approvals of the OWNER and of other agencies. The Work Plan, when approved, shall be jointly used by OWNER, ENGINEER, and CONTRACTOR to substantiate or mitigate the impact of delays and Change Orders and measure progress of the CONTRACTOR.
- B. This Specification also requires the CONTRACTOR to associate the Schedule of Values with the Work Plan; that the CONTRACTOR use the Work Plan to assist the OWNER in evaluating progress of the Work and in making payments for Work performed; and that the CONTRACTOR prepare record drawings and data showing how the Work is being performed as to sequencing, timing, and rate of progress.

1.02 RELATED WORK

- A. General Conditions of the Contract.
- B. Section 01010, Summary of Work.
- C. Section 01027, Applications for Payment.
- D. Section 01040, Coordination.
- E. Section 01200, Project Meetings.
- F. Section 01300, Submittals.

1.03 GENERAL PROVISIONS FOR DEVELOPMENT OF A WORK PLAN

- A. The CONTRACTOR shall prepare a detailed Work Plan consisting of Schedule, Schedule of Values (SOV), and a Detailed Cost Breakdown (DCB). In addition, the work plan shall include a detailed narrative, sketches, product data and other information describing details of the CONTRACTOR's means and methods to complete the work.
- B. All costs incurred by the CONTRACTOR to correctly develop, implement, coordinate, and administer the Work Plan shall be borne by the CONTRACTOR and shall be included in his

- bid and become part of his Contract. The CONTRACTOR shall be responsible for all his subcontractors and suppliers in the implementation of the Work Plan.
- C. The CONTRACTOR shall designate, within one week after Notice to Proceed, an authorized representative of his firm who shall be responsible for the development and maintenance of the Work Plan. This representative of the CONTRACTOR shall have direct project control and complete authority to act on behalf of the CONTRACTOR in fulfilling the commitments shown in the Work Plan. This representative shall not be changed during the term of this Contract without the prior consent of the ENGINEER unless he or she shall cease to be in the employ of the CONTRACTOR.
- D. The ENGINEER will be the final judge as to the acceptability of the Work Plan and is empowered under the terms of the Contract to call upon the CONTRACTOR to reschedule his Work and remedy the functioning of the systems whenever deficiencies of whatever nature occur during the course of the Work. Refusal by the CONTRACTOR to maintain the progress of his work consistent with the Schedule included in the Work Plan shall be interpreted as an obvious delay of the Contract by the CONTRACTOR. Adherence to the established Schedule shall be obligatory upon the CONTRACTOR and his subcontractors for the Work under this Contract.
- E. The ENGINEER's review of the CONTRACTOR's Schedules will be only for conformance with the Contract Times in the Agreement, and those sequences of Work indicated in or required by the Contract Documents. The ENGINEER's review, comments, and exceptions taken, if any, shall not, extend to, nor will constitute directions nor approval of, the means, methods, techniques, sequences, or procedures of construction or safety precautions, the corrections of which shall be the sole responsibility of the CONTRACTOR.
- F. The ENGINEER's approval of the CONTRACTOR's Work Plan shall not relieve the CONTRACTOR of any responsibilities otherwise designated under the Contract. Approval of a Schedule with undisclosed variations or errors such as omitted Work or erroneous sequences will not relieve the CONTRACTOR from completing the omitted or impacted Work within the Contract Time(s) at no change in the Contract Price.

1.04 SCHEDULE

- A. A Schedule representing all Work under this Contract and all interfaces required with each other contracts shall be prepared and submitted by the CONTRACTOR. This schedule shall show in sufficient detail the priority, sequencing and interdependence of activities and the sequence in which the Work is to be accomplished as planned by the CONTRACTOR to comply with the Contract Time(s), named allowances, and those sequences of Work indicated in or required by the Contract Documents. Each stage of Work shall be analyzed in sufficient detail by the CONTRACTOR to ensure reasonably accurate time durations. When completed, the Schedule shall represent the CONTRACTOR's own plan for the Project, consistent with Contract requirements.
- B. It shall be the CONTRACTOR's responsibility to ensure that all of his Work is described by the Schedule and that the schedules do correctly represent the sequence, means, methods,

techniques, and procedures for completing his Work. In preparing the Schedule, the CONTRACTOR shall:

- 1. Verify site conditions that may in any manner affect cost, progress, scheduling, performance, and furnishing of the Work.
- 2. Work with all major Subcontractors and Suppliers to obtain information on activities, sequencing, and activity durations for incorporation into the Schedule.
- 3. Obtain written interpretations from the ENGINEER as warranted.
- C. The Schedule shall show sufficient detail for Work activities to clearly identify, separately and individually, those factors that may in any manner affect the cost, schedule, progress, performance, and furnishing of the Work. At a minimum, the activity breakdown shall delineate the following:
 - 1. Work associated with the CONTRACTOR's installation, erection, and other field construction activities for the Contract as defined in Work Sequence in Specification Section 01010.
 - 2. Items pertaining to the approvals of regulatory agencies including for permits and approvals.
 - 3. The time required for the review and approval of shop drawings and schedules.
 - 4. All special Work sequences, schedule milestones, intermediate Contract Times, named allowances set forth in the Contract Documents.
- D. Activity durations shall be in calendar days and represent the CONTRACTOR's single best estimate based on the Work included and the resources planned for that activity.
- E. Supporting data shall be submitted in the form of a narrative and shall include:
 - 1. The status of the Schedule in terms of number of calendar days ahead or behind the Contract Time(s).
 - 2. The progress status (i.e., progress achieved versus that forecasted) for:
 - a. Activities designating accomplishment of Substantial Completion milestones.
 - b. Critical and other significant activities.
 - c. Work related to achieving milestones set forth the Work Sequencing indicated in or required by the Contract Documents.
 - 3. The assumptions made in incorporating Work related to pending or authorized Change Orders.

- 4. Actual or potential delays, including causes, the steps taken or anticipated to mitigate their impact and the anticipated effect on the Schedule as a whole.
- 5. Any significant changes in Schedule sequences, and their basis thereof.
- 6. OWNER and ENGINEER activities that become due over the next 2 months for CONTRACTOR to maintain the Schedule.
- 7. CONTRACTOR's responses to ENGINEER's comments raised in the review of the previous Schedule submittal.
- 8. Actions taken to address schedule non-compliance.
- F. Any float in the CONTRACTOR's approved schedule belongs to the project, not the CONTRACTOR. The CONTRACTOR shall not be entitled to additional compensation due to loss of float caused by weather; wet conditions, lack of surface or groundwater controls, high or ponded water in work areas, coordination or for any other reason.

1.05 SCHEDULE OF VALUES (SOV)

- A. The Schedule of Values shall be a tabulation of each activity of the Schedule listed and the associated cost of each activity. The cumulative cost of all activities shall equal the total Contract price. Overhead, profit, and the costs of bonds, insurance, for the entire project, shall be tabulated. Separate cost activities will be allowed for such items, as mobilization, insurance, and bonds only if specified the Special Notice to Bidders. Each Schedule of Values activity shall be cross-referenced to an item of Work in the Detailed Cost Breakdown.
- B. The cost of the individual items in the Detailed Cost Breakdown shall be equal to the sum of costs of the activities in the Schedule of Values related to that item. The Schedule of Values and the Detailed Cost Breakdown, once approved by the ENGINEER, shall become the basis for progress payments under this Contract and cannot thereafter be changed without the written approval of the ENGINEER.
- C. Identify Schedule of Values with:
 - 1. Title of Project and location.
 - 2. Project number.
 - 3. Name and Address of CONTRACTOR.
 - 4. Contract designation.
 - 5. Date of submission.
 - 6. Submission number.

- D. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- E. Identify each line item with the number and title of the respective major section of the specifications.
- F. For each major line item list subvalues of major products or operations under the item.
- G. For the various portions of the Work:
 - 1. Each item shall include a directly proportional amount of the CONTRACTOR's overhead and profit.
 - 2. For items on which progress payments will be requested for stored materials, break down the value into the cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the ENGINEER.

1.06 DETAILED COST BREAKDOWN (DCB)

A. The Detailed Cost Breakdown shall be a detailed tabulation of the unit price or lump sum bid. The breakdown will include, for each major operation to be performed under the Contract, the individual items of Work including quantities, unit prices, and total cost.

The sum of the total cost of the individual items shall be equal to the total Contract price.

1.07 COMPLETE WORK PLAN

- A. At the Pre-Construction Meeting, the CONTRACTOR shall deliver to the ENGINEER for review and acceptance, five (5) copies of the complete Schedule, section 1.04 herein.
- B. The ENGINEER will review the Schedule submittal and return it approved or disapproved within a period of ten (10) working days. If disapproved, the CONTRACTOR shall promptly make corrections and resubmit within ten (10) working days for the ENGINEER's action within the following ten (10) working days.
- C. The ENGINEER will review the Schedule of Values section 1.04 herein and return same, approved or disapproved, within a period of ten (10) working days. If disapproved, the CONTRACTOR shall promptly make revisions and resubmit within five (5) working days for the ENGINEER's action within five (5) working days.
- D. Pursuant to Article 14 of the General Conditions, acceptance by the ENGINEER of the Schedule of Values will be a condition of progress payments for the Work.

1.08 PAYMENT AND PROGRESS REPORTING

A. Pursuant to Section 01200 herein, the ENGINEER will schedule a monthly progress meeting between the ENGINEER and the CONTRACTOR.

- B. Five (5) working days prior to the scheduled monthly meeting, the CONTRACTOR will submit to the ENGINEER a "Marked-Up" Schedule, a "Marked-Up" Schedule of Values, and a Supporting Schedule Narrative, showing the anticipated status of each activity as of the schedule payment cut-off date. The "Marked-Up" Schedule shall be the latest version of the Schedule on which "Updates" and, where applicable, "Revisions" are graphically displayed. "Updates" are a graphic representation of the current Contract status, including completed activities, and remaining duration of those activities started but not completed as of the scheduled payment cutoff date. "Revisions" will be made when one or more of the following conditions occur, as determined by the ENGINEER, with the following effect:
 - 1. Progress falls behind schedule and monitoring becomes impractical.
 - 2. A Change Order significantly affects the Date of Substantial Completion of the sequence of activities. Change Order work for Change Orders that have not been issued are to be clearly notes as "proposed" or "pending". Change Order time shall be shown as "proposed" or "pending" until the Change Order is issued. The Cost of the Change Order will be shown as \$0 on the Schedule of Values until the Change Order is issued.
 - 3. The progress of the Work, or the planned sequence of the Work, does not conform to the CONTRACTOR's current Schedule. If the CONTRACTOR purposes change or revise his method of operating and it affects the approved Schedule, he shall notify the ENGINEER in writing and specifically delineate the reasons for and nature of such changes and revisions. If the ENGINEER approves such changes/revisions, the CONTRACTOR shall revise and submit for further approval, without any additional cost to the OWNER, all of the affected portions of the Schedule. The Schedule shall be revised by the CONTRACTOR only after prior written approval by the ENGINEER of the proposed changes or revisions. Revisions may consist of changing portions of approved activities or other revisions as approved by the ENGINEER.
 - 4. The completion of any activity, whether or not critical to performance of the Work, falls more than 100 percent behind its prior approved duration. The CONTRACTOR shall prepare and submit for approval proposed revisions showing each such activities reflecting completed and uncompleted Work.
 - 5. The progress of the Work is significantly and adversely affected as a result of any of the events, conditions, circumstances, acts of neglect, or acts of omissions as provided in the General Conditions that are incorporated by reference herein. Under such conditions, the ENGINEER shall direct the CONTRACTOR to reschedule the Work and/or the Date of Substantial Completion to reflect such conditions and the CONTRACTOR shall revise his/her schedule accordingly. As a result of such conditions, the CONTRACTOR shall take all possible action to minimize any time delays and costs to the OWNER.
- C. If the CONTRACTOR refuses, fails, or neglects to provide the required Schedules or related

data pricing and Shop Drawings, and schedule recovery data:

- 1. The CONTRACTOR will be deemed not to have provided sufficient information to the ENGINEER upon which progress can be evaluated, and the ENGINEER may refuse to recommend the whole or part of any outstanding payment if, in the ENGINEER's opinion, it would be incorrect to make such representations to the OWNER. Further, the OWNER may refuse to make payments of those amounts recommended by the ENGINEER because of the CONTRACTOR's failure or refusal to provide the required Progress Schedule and related submittal data.
- 2. The ENGINEER may perform, or may hire a specialist to perform, the Schedule, analysis and those parts deemed to be lacking, inadequate, or insufficient. The cost for this extra work by the ENGINEER will be charged against any future progress payment due to the CONTRACTOR.
- D. At the monthly progress meeting a review of the current status of the Work and the progress during the monitoring period will be made utilizing the "Marked-Up" Schedule.
 - Modification of the "Marked-Up" Schedule may be made during the progress meeting if it is mutually agreed that these modifications will more accurately reflect actual Work status and progress.
- E. In the event of a dispute regarding the percentage of Work completed that the ENGINEER and the Contract cannot resolve at the monthly meeting, the ENGINEER will use his sole judgment in representing the quantity and fair value of the Work completed for those activities in dispute.
- F. After the monthly meeting, the ENGINEER will proceed processing the progress payment.
- G. Utilizing the information on the "Marked-Up" Schedule, the CONTRACTOR shall change the original or previous version of the Schedule. Changes to the Schedule shall be identified as Updates or Revisions numbered sequentially.
- H. Within five (5) working days after the monthly progress meeting, the CONTRACTOR shall transmit to the ENGINEER for approval, five (5) copies of the Updated or Revised Schedule as part of the "Update" submittal set(s). "Update" submittal sets shall consist of revised detailed Diagrams, Schedule of Values, all of the associated computer reports, and a Supporting Narrative. All Diagrams, Schedule of Values, and associated computer reports and Narratives submitted by the CONTRACTOR shall be consistent with the requirements of this Specification and shall reflect the current status as mutually agreed to at the monthly progress meeting.

1.09 SCHEDULE COMPLIANCE

A. Whenever it appears from the current monthly Schedule that delays have resulted so that the Date of Substantial Completion will not be achieved or whenever directed by the ENGINEER, the CONTRACTOR shall submit a written statement to the ENGINEER. This

statement shall describe the actions, activities, and steps he intends to take to remove, prevent, or arrest any delay in the approved schedule and, at no cost to the OWNER, the CONTRACTOR shall take one or more of the following actions:

- 1. Increase construction labor and manpower in such quantities and crafts that will substantially eliminate, in the ENGINEER's judgment, the delay to the Work.
- 2. Increase the number of working hours per shift; shifts per work day per week; the amount or type of construction equipment; or any appropriate combination of working hours, shift, or equipment that shall substantially eliminate, in the ENGINEER's judgment, the delay to the Work.
- 3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities including, but not limited to, such actions as overlapping of dependent activities, sequencing changes to accommodate increased activity concurrency, assignment of additional labor or equipment, shift or overtime Work, expediting of submittals or deliveries, or any combination of the foregoing, and comply with the revised schedule.
- B. If the CONTRACTOR refuses, fails, or neglects to submits written statement, pursuant to Paragraph A, above, the ENGINEER may direct the level of effort in labor and manpower, equipment, and Work schedule including, but not limited to, overtime, weekend, and holiday Work to be utilized or employed by the CONTRACTOR to remove, prevent, or arrest the delay to the critical path in the approved schedule. After notification by the ENGINEER, the CONTRACTOR shall promptly provide such level of effort in labor and manpower, equipment, and Work schedule at no additional cost or expense to the OWNER.

1.10 REVIEW OF SCHEDULES

- A. ENGINEER's review of Schedule submittals will be predicated on a CONTRACTOR's stamp of approval signed by the CONTRACTOR and the CONTRACTOR's subcontractors performing Work under an appropriate agreement with CONTRACTOR with subcontract price in excess of \$50,000.00. CONTRACTOR's stamp of approval on the Schedule shall constitute a representation to the OWNER that the CONTRACTOR has either determined or verified data on the Schedule, or assumes full responsibility for doing so, and that CONTRACTOR and his subcontractors have reviewed and coordinated the sequences shown in the Schedule with the requirements of the Work under the Contract Documents.
- B. The ENGINEER's review will not be intended to be for the purpose of determining the accuracy of other matters that may be contained in the Schedules. When the review of a Schedule results in a number of comments or exceptions taken, the ENGINEER does not warrant that these comments are inclusive of all variations, as it shall remain the responsibility of the CONTRACTOR to the requirements of the Contract Documents and to identify expressly any proposed variations.
- C. ENGINEER's review of the Schedules shall not relieve CONTRACTOR from responsibility for any variations from the Contract Documents unless CONTRACTOR has written by

- means of a specific notice, called the ENGINEER's attention to each variation, and the ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompany the Schedules.
- D. ENGINEER's approval of the Schedules will not relieve the CONTRACTOR from responsibility for errors and omissions in the submittals or from responsibility for having complied with the provisions above. Approval of a Schedule with undisclosed variations or errors such as omitted Work or erroneous sequences will not relieve the CONTRACTOR from completing the omitted or impacted Work within the applicable Contract Time(s).
- E. If the CONTRACTOR considers any comment indicated on the returned Schedules to constitute an order to change the Contract Documents, he shall notify the ENGINEER immediately in accordance with the requirements for notices of apparent changes set forth in the General Conditions.
- F. The ENGINEER will review a submittal/resubmittal a maximum of two times, after which the cost of the review shall be borne by the CONTRACTOR. The ENGINEER's cost of additional reviews will be equal to the ENGINEER's charges to the OWNER under the terms of the ENGINEER's agreement with the OWNER.
- G. No partial submittals will be reviewed. Submittals not complete will be returned to the CONTRACTOR for resubmittal.

1.11 ALTERNATIVES

- A. Proposals from the CONTRACTOR to substitute means, methods, techniques, Work sequences, or procedure of construction indicated in or required by the Contract Documents that affect the selection of activities and sequences in the Schedule shall be submitted in accordance with the General Conditions. The CONTRACTOR agrees and understands that application for such substitution will not be considered until after the CONTRACTOR has submitted and the ENGINEER has approved the Complete Work Plan as provided by these Contract Documents.
- B. Schedules anticipating achievement of Substantial Completion ahead of the corresponding Contract Time, and therefore incorporating Contract Float Time for the Work, or parts thereof, shall be considered equivalent or equal to Schedules anticipating Substantial Completion exactly on Contract Time.
- C. Upon approval by the ENGINEER of a Schedule with Contract Float Time, and if the CONTRACTOR proposes that compensation for delay must be measured from the anticipated early schedules ahead of the Contract Time, the CONTRACTOR agrees and understands that said proposal will represent to the OWNER that the approved Schedule be evaluated as a substitute Schedule for the purposes of changing the Contract Time to that supported by the approved CONTRACTOR's Schedule. Evaluation of that substitution will be in accordance with the General Conditions, and the Supplementary Conditions, and will require additional supporting data explains and substantiates the basis of the anticipated early schedule. Such supporting data shall consist of:

- 1. Notice of scheduled Work hours.
- 2. Information related to the rates of production including pertinent quantities, crew sizes, man power requirements, major items of equipment, etc. for critical and other significant activities.
- 3. Express or implied contingency allowances figured for activities for such factors as weather, delays, activities of the OWNER and ENGINEER to respond to reports of differing site conditions, and other relevant factors.

Acceptance of that substitution will be evidenced by a Change Order shortening the Contract Time accordingly but maintaining the Contract prices and the level of liquidated damages and incentive set forth in the Agreement.

1.12 TIME ALLOWANCE REQUIREMENTS

A. Reference is made to:

- 1. The time allowance required for the ENGINEER's review and approval of submittals of Shop Drawings and samples.
- 2. The requirements for anticipated repeat submission for particular items of materials or equipment.
- 3. The requirements for anticipated or required time intervals for the performance of specific parts of the Work by the CONTRACTOR.

B. Reference is made to:

- 1. Those other activities indicated in or required by the Contract Documents that are responsibility of the OWNER and ENGINEER.
- 2. The potential time requirements of the OWNER and ENGINEER to investigate instances of potential differing site conditions.
- 3. The time requirements for the ENGINEER to obtain and receive laboratory analysis of removal areas to allow for environmental closure of the site.
- 4. Those other named time allowances required by the Contract Documents.

It is understood that the Contract has included in the Total Contract Price the effect of accommodating all of these time allowances and requirements in the planning, scheduling, and execution of the Work; that the CONTRACTOR's Work plan will incorporate activities and sequences contemplated by the time allowances based on the information indicated in or required by the Contract Documents; and that the CONTRACTOR shall cause the Work or requirements covered by such time allowances to be done within the limits of the Contract

Time.

1.13 SCHEDULE OF SUBMITTALS

The following tabulation denotes schedule, information, and documentation required to be supplied by the CONTRACTOR:

ITEMS	SCHEDULE

1. Description of first two weeks work.

At the Preconstruction Conference.

2. Initial submittal of Schedule, Schedule Within twenty (20) working days after of Values, and Detailed Cost Breakdown. Notice to Proceed.

3. "Marked-Up" Schedule. Five (5) working days before monthly

progress meeting and with submission of

draft Application for Payment.

4. Updated or Revised Schedule. Five (5) working days after monthly

progress meeting.

5. Shop Drawings Submittal Schedule. Preliminary Schedule within twenty (20)

days of Notice to Proceed; updated for

each progress meeting.

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

CONSTRUCTION STAKING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall set stakes and markers in the work area as required to control all work, including the access route, grading work, revegetation, and any other work associated with this project.
- B. The CONTRACTOR shall utilize batter-boards with strings, lasers, or surveying instruments operated by qualified competent personnel to control the construction Work. If the method being used by the CONTRACTOR fails to give proper alignment and grade control to the Work, the ENGINEER shall be empowered to order the CONTRACTOR to use such other method(s) as will provide adequate control.
- C. The ENGINEER may require the CONTRACTOR, at the CONTRACTOR's expense to provide such masts, scaffolds, batter-boards, straightedges, templates, or other devices as may be necessary to facilitate laying out, inspecting and constructing the Work.
- D. The CONTRACTOR shall verify site controls on a monthly basis.
- E. The CONTRACOR shall provide As-Builts of floodplain benches, dredging, and step pool work to the ENGINEER prior to submitting Pay Application on a monthly basis.

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment.
- B. Section 02100, Site Preparation
- C. Section 0220, Soil Erosion and Sedimentation Control
- D. Section 02300, Earthwork.
- E. Section 02930, Landscaping

1.03 SUBMITTALS

A. The CONTRACTOR shall submit for ENGINEER's review and approval a Staking Schedule showing the order in which the CONTRACTOR proposes to control and conduct the construction operation prior to the start of Work.

1.04 RELOCATION AND RE-ESTABLISHMENT

A. Where change of location of stakes is required by the CONTRACTOR, or where the CONTRACTOR fails to properly preserve construction survey stakes, such resetting or relocations of stakes shall be done by the CONTRACTOR at no additional cost to OWNER.

B. The CONTRACTOR shall bear all expenses involved in re-establishing and/or resetting any survey control point, land survey point or monument lost or disturbed during his/her construction operation. Such Work shall be done under the direct supervision of a licensed land surveyor.

1.05 STAKING REQUIRED

- A. The CONTRACTOR is required to stake for Staging and Access Areas.
- B. The CONTRACTOR is required to stake for Dewatering Containment Area.
- C. The CONTRACTOR is required to stake for Pond Outlet.
- D. The CONTRACTOR is required to stake for Rock Vanes.
- E. The CONTRACTOR is required to stake for all grading and excavation.
- F. The CONTRACTOR is required to stake locations of all revegetation areas, including seeding and planting zones and individual woody plant locations.
- G. Staking of construction easement areas.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

QUALITY CONTROL

PART 1	GENERAL

1.01 SCOPE OF WORK

- A. Quality assurance control of construction
- B. Tolerances.
- C. References.
- D. Inspecting and testing laboratory services.
- E. CONTRACTOR'S field services and reports.

1.02 QUALITY ASSURANCE - CONTROL OF CONSTRUCTION

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Works of specified quality.
- B. Comply with specified standards as minimum quality for Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform by persons qualified to produce workmanship of specified quality. Use persons licensed to perform Works where required by these Specifications or Laws and Regulations.
- D. Secure products and Works in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- E. Materials furnished and finished or intermediate stages of Works shall be sampled, tested, and inspected as specified individual Sections of these Specifications and as required by reference standards.
- F. Performance of tests or observations by ENGINEER or OWNER is sole benefit of ENGINEER and OWNER and are not intended to replace CONTRACTOR's quality control program. CONTRACTOR is solely responsible for establishing and implementing quality control program to ensure that Works are in accordance with Contract Documents.
- G. It is CONTRACTOR's responsibility to notify ENGINEER when CONTRACTOR believes Works (or intermediate stages or parts of Works) are of specified quality and to permit ENGINEER or OWNER to perform independent tests or analyses.
- H. Testing by ENGINEER or failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate OWNER for final acceptance.

1.03 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Works. Do not permit

tolerances to accumulate.

B. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of specified standard, except when more rigid requirements are specified or required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Notice of Award, except where specific date established by code or by individual specification Section.
- C. Contractual relationship, duties, and responsibilities of parties in Contract and those of ENGINEER shall not be altered from Contract Documents by mention or inference otherwise in any reference document.
- D. Publications referred to in these Specifications form part of Specifications to extent specified in individual specification Sections.
- E. All plant materials shall comply with the American Nurseryman Association standards for quality control.

1.05 INSPECTING AND TESTING LABORATORY SERVICES

- A. The CONTRACTOR shall perform testing services as indicated in the Contract Documents.
- B. The CONTRACTOR shall provide the results of the testing to the ENGINEER for review and approval prior to the continuation of work.
- C. The CONTRACTOR shall coordinate with the ENGINEER in the performance of inspections, or approvals required by Contract Documents except as otherwise specifically provided in Contract Documents.
- D. Inspecting, testing, and source quality control may occur on or off Site.
- E. Reports shall be submitted to ENGINEER, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- F. Cooperate with personnel of inspecting and testing firm, and provide safe access to Works.
- G. Provide incidental labor and facilities.
 - 1. To provide access to Works to be tested.
 - 2. To obtain and handle samples at Site or at source of products to be tested.
 - 3. To facilitate tests and inspections.

- 4. To provide storage and curing or preservation, as required, of test samples.
- H. Notify ENGINEER 48 hours prior to expected time for operations requiring inspecting and testing services.
- I. Retesting required because of non-conformance to specified requirements will be performed by the same independent firm on instructions by ENGINEER.
- J. If defects or deficiencies are revealed during testing or inspecting, correct such defects and deficiencies.

1.06 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, test, adjust, and calibration of equipment, and to initiate instructions when necessary.
- B. Submit qualifications of observer to ENGINEER 30 days in advance of required observations. Observer subject to approval of ENGINEER.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Submit report in duplicate within 30 days of observation to ENGINEER for information.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SCOPE OF WORK

Furnish, install and maintain temporary facilities required for construction; remove upon completion of the Work unless otherwise specified.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 01200, Project Meetings.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code, OSHA, MIOSHA, and any local codes.

1.04 TEMPORARY POWER

- A. The CONTRACTOR shall make his own arrangements to provide power distribution as required throughout the Project. Termination of power distribution for each voltage shall be in convenient locations. The CONTRACTOR shall provide at each termination, circuit breakers, disconnect switches, and other electrical devices as required to protect the power supply system.
- B. All temporary equipment and wiring for power shall be in accordance with the applicable provisions of governing codes, and shall be subject to inspection and approval of the local Department of Buildings and Safety Engineering. Temporary wiring shall be maintained in a safe condition and shall be utilized so as not to create a hazard to persons or property.
- C. When permanent electrical power and lighting systems are in operating condition, they may be used for temporary power and lighting for construction purposes provided that the CONTRACTOR:
 - 1. Obtains the approval of the ENGINEER.
 - 2. Assumes full responsibility for power and lighting systems.
 - 3. Installs necessary meters and pays all costs for operation and restoration of the systems and for all electrical power consumed.

1.05 TEMPORARY LIGHTING

- A. The CONTRACTOR shall install and maintain a temporary lighting system as required to satisfy minimum requirements of safety and security.
- B. The CONTRACTOR shall make all necessary applications, obtain and pay for required permits for the temporary service and pay all fees and changes for the electrical energy used.
- C. The CONTRACTOR shall furnish all wiring, switches, fuses, receptacles, lamps and other temporary electric and light equipment, as may be required for his Work. Temporary power and light circuits shall be thoroughly insulated and waterproof. No voltage higher than 120 volts shall be used on any lighting circuitry, unless specifically approved by the ENGINEER. All 15 and 20 ampere receptacle outlets on single-phase circuits shall have approved ground fault circuit protection. All switches shall be of the enclosed safety type. The temporary lighting system shall be subject to inspection and approval of the local Department of Building and Safety Engineering.

1.06 TEMPORARY SANITARY REQUIREMENTS

A. Committing a nuisance on the Site is prohibited and any employee who violates such provisions shall be promptly removed from the Work and shall not again be employed on the Work without the written consent of the ENGINEER. At the start of the Work, suitable and adequate toilet facilities shall be provided for all employees, subject to the approval of the ENGINEER as to the type, size, and location. All temporary sanitary facilities cost is the responsibility of the CONTRACTOR.

1.07 TEMPORARY FIRST-AID

- A. A completely equipped first-aid kit shall be provided and maintained in a clean and orderly condition at the Site of each location where Work is progressing. The first-aid kit shall be readily accessible at all time where people are employed on the Work. The required number of employees who have been properly instructed shall be designated in charge of first-aid Work. The CONTRACTOR shall designate a responsible person on site who shall be in charge of administering first aid when needed.
- B. Telephone numbers for summoning aid from the Police Department, the Fire Department, physicians, ambulances, inhalator, and rescue squads from outside sources shall be conspicuously posted at each Site of the Work.
- C. Provide portable UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide portable UL-rated Class ABC dry chemical extinguishers or a combination of NFPA recommended Classes for the exposure. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

1.08 TEMPORARY CONSTRUCTION

A. If during construction, existing fences are damaged or destroyed, the CONTRACTOR shall restore them to the satisfaction of the ENGINEER. The CONTRACTOR shall bear all expense and supply whatever labor and material necessary to restore these fences, at no

- change in Contract sum.
- B. Complete or partial bulkheads or temporary dams may be built as an aid to the construction operations when approved as to location, type, and size by ENGINEER. Such bulkheads or dams shall be removed prior to the completion of the Work.
- C. The CONTRACTOR shall, where necessary, construct and maintain temporary access roads and drives to all construction facilities with approval by the ENGINEER. The temporary access roads and drives shall be removed by the CONTRACTOR. The areas to be restored shall be compatible with the adjacent undisturbed areas.
- D. The CONTRACTOR shall complete all restoration Work as soon as possible so as to cause a minimum of interference with the normal usage of the land by OWNER for the control of soil erosion and siltation. The restoration or reconstruction of drainage structures and other facilities shall be performed as soon as practicable and in cooperation and compliance with the OWNER and as directed by the ENGINEER.
- E. All temporary construction facilities shall be neatly constructed and arranged on the Site in an orderly manner. The general arrangement of such facilities shall be subject to approval by the ENGINEER. The CONTRACTOR shall prepare and submit to the ENGINEER, for approval prior to starting Work, a construction plan layout, showing arrangement of storage areas, temporary buildings, construction equipment, and storage and Work areas. Suitable, weather-tight storage sheds with raised floors shall be provided of capacity required as specified to contain all materials that might be damaged by storage in the open.
- F. Construction equipment and other facilities such as ladders and ramps shall be strong, substantial, safe and suitable for the purpose intended and shall meet all the applicable requirements of the State of Michigan and the authorities having jurisdiction in the area of the Work.
- G. When temporary building, construction equipment, and other facilities are no longer needed for the Work, they shall be promptly dismantled and removed from the Site.
- H. Some aspects of the Contract may necessitate temporary removal of portions of the property fence. The CONTRACTOR shall provide temporary fencing in order to maintain the security of the site.

1.10 EXISTING UTILITIES

- A. Some underground utilities and underground structures such as pipe lines, electric conduit, and sewers may be shown on the Drawings. Although neither the correctness nor the completeness of such information is guaranteed by the OWNER, the information shown is considered to be reasonably correct and complete.
- B. All underground structures whenever or whatever nature encountered, shall be preserved and restored by the CONTRACTOR unless otherwise shown on the Drawings and all Work necessary therefore shall be included in the Work under the Contract.

- C. Whenever, in judgment of the ENGINEER, such facility need not be removed or relocated, but may be maintained or protected by normal methods without unduly interfering with the proper execution of the Work, such maintenance or protections shall be performed by the CONTRACTOR. In lieu thereof, the CONTRACTOR may arrange with the utility concerned to maintain or protect its facility and he shall bear all expense in connection therewith.
- D. All damages, cracks, settlements, movements, or service disruptions to underground facilities or surface features created or caused by the construction operations shall be corrected without loss of useful life of the facility by adequate repair and/or replacement to the satisfaction of the ENGINEER at no additional cost to the OWNER.
- E. The CONTRACTOR will not be entitled to extension of time for completion on account of delaying any required movement of utility facilities if he was late in providing the original notification to the ENGINEER.
- F. The cost of moving, altering, relocating or maintaining public and private utilities shall be considered incidental to the total Contract sum. The CONTRACTOR shall make all arrangements involving utilities with the respective owner.
- G. No payment will be made where utilities shown in the approximate location have to be removed and replaced or supported within the excavation made for the Work under the Contract.
- H. Whenever pipelines and structures under construction cross existing sewers, utility pipes, or conduit, special precautions shall be taken and protective measures used to avoid damage to the existing facilities. Under no circumstances shall the CONTRACTOR manipulate utility switches, valves, pipes, conduit and the like.
- I. While working near a water main that is considered a hazard, the CONTRACTOR should request the owner to cut off the pressure in such main. Wherever it is possible to do so, the OWNER will cooperate by taking such mains out of service while the construction Work is progressing. Under no circumstances shall the CONTRACTOR operate water main valves.

1.11 FENCING

- A. The CONTRACTOR shall be responsible for securing the materials and equipment.
- B. Temporary fencing (including gates) shall be installed as required to secure the staging/storage areas. All temporary fencing shall be removed upon completion of the Project.

PART 2 - PRODUCTS (NOT USED) PART 3 - EXECUTION (NOT USED)

HEALTH & SAFETY PLAN

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Prepare and maintain on-site Health and Safety Plan (HASP) for CONTRACTOR's operations at the Work site as required in this section.
- B. All grading shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P), and State and local requirements. Where there is conflict between OSHA and State and local regulations exists, the more stringent requirements shall apply.

1.02 REFERENCES

- A. Michigan Occupational Health and Safety (MIOSHA); Chapter 29, Code of Federal Regulations (CFR).
 - 1. Exposure to gases, vapors, dusts and mists (MIOSHA 6201; 29 CFR 1926.55).
 - 2. Exposure to lead (MIOSHA 325.51991-51992; 29 CFR 1926.62).
 - 3. Exposure to cadmium (MIOSHA 325.51851-51885; 29 CFR 1926.1127).
 - 4. Exposure to inorganic arsenic (29 CFR 1926.1118).
 - 5. Occupational noise exposure (MIOSHA 6260; 29 CFR 1926.52).
 - 6. Protective equipment (MIOSHA 6501; 29 CFR 1926, Subpart E).
 - 7. Excavation (MIOSHA IX, X, XIII; 29 CFR 1926, Subpart P).
- B. Copies of MIOSHA safety standards for general industry and construction can be obtained from the Michigan Department of Labor, Safety Standards Division, in Lansing, Michigan. Copies of MIOSHA health construction standards can be obtained from the Michigan Department of Public Health, Division of Occupational Health Standards, in Lansing. OSHA safety and health standards for the construction industry are obtained from the U.S. Government Printing Office, Washington, D.C.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

A. The CONTRACTOR shall prepare a site Health and Safety Plan before any mobilization or work can begin. There shall be a copy of the CONTRACTOR's HASP on site at all times.

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall prepare a Traffic Control/ Transportation Plan and provide for maintenance of roads and traffic control as specified.
- B. The CONTRACTOR shall adhere to requirements for working within the MDOT ROW, as required.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 01300, Submittals.

1.03 SUBMITTALS

A. Traffic Control/Transportation Plan: As part of the mobilization, the CONTRACTOR shall submit a detailed Transportation Plan demonstrating compliance with specified requirements to ENGINEER for approval. CONTRACTOR shall not commence work until plan is approved by ENGINEER. Plan shall be in accordance with the Michigan Department of Transportation Manual on Uniform Traffic Control Devices as well as any local requirements.

1.04 MAINTAINING TRAFFIC

- A. Traffic shall be maintained on surrounding streets including Seven Mile and Fairbrook throughout the project.
- B. The CONTRACTOR shall provide access for local traffic to property within the limit of work by means of temporary roads, drives, culverts or other means approved by the ENGINEER. The CONTRACTOR shall grade, add surfacing materials, and dust palliatives to such temporary roads and drives as necessary for the proper maintenance of traffic.
- C. Where the shoulder is used to maintain traffic, the shoulder shall be graded, surface treated for dust, constructed, or reconstructed, as specified herein. If the construction work is suspended due to weather conditions or for any other reason, sufficient labor, materials and equipment shall be ready for immediate use at all times for the proper maintenance of traffic. Surfacing materials and dust palliatives shall be applied at such times and locations and in such amounts as directed by the ENGINEER.

Where shoulders are low, high, soft or rough, adequate provisions shall be taken to inform and protect the traveling public by means such as construction warning signs, barricades, lighted devices, etc. Such shoulder hazards shall be eliminated as soon as practicable.

- D. The CONTRACTOR shall furnish, erect and maintain all signs, barricades, lights, and traffic regulators, in accordance with the requirements of the current "Michigan Manual of Uniform Traffic Control Devices," and all flagmen and watchmen as are necessary to maintain and safeguard traffic within the Contract Limits. Failure to comply with these requirements may be cause to issue a stop Work order, which shall remain in effect until all necessary devices are in place and operational.
- E. The issuance of a stop Work order shall not be reason for granting additional compensation or an extension to the Contract Time.

1.05 EXISTING SIGNS

A. No stop sign, traffic control or warning device shall be taken down until the agency having jurisdiction over the roads has been notified and arrangements for reinstallation have been made. The CONTRACTOR shall provide temporary signs, traffic control devices, warning devices, or watchmen continuously from the time the item is removed until it is reinstalled. All signs removed shall be replaced with signs meeting requirements of the agency having jurisdiction over the roads.

1.06 SITE ACCESS AND PARKING

- A. The CONTRACTOR shall locate roads, drives, walks and parking facilities to provide uninterrupted access to construction office, mobilization, work, storage areas, and other areas required for execution of the Contract, as shown on the Drawing and as coordinated with the OWNER.
- B. All construction access shall be from Seven Mile Road.
- C. The CONTRACTOR shall maintain driveways a minimum of 15 feet wide between and around combustible materials in storage and mobilization areas.
- D. The CONTRACTOR shall maintain traffic areas as free as possible of excavated materials, construction equipment, products, snow, ice, and debris.
- E. The CONTRACTOR shall not utilize existing parking facilities for construction personnel or for CONTRACTOR's vehicles or equipment, unless written permission is received from the OWNER.

1.07 TRUCKING ROUTE AND ROAD MAINTENANCE

A. The CONTRACTOR shall have equipment and delivery access to the project site and truck hauling to/from project site as indicated on Plans.

- B. Prior to the start of construction, the CONTRACTOR shall submit a list indicating the streets and roads within the municipality that his equipment will use off the project site.
- C. The CONTRACTOR shall comply with all safety requirements, weight restrictions and speed limits.
- D. All gravel and dirt roads or streets used shall be maintained by grading, placing dust palliatives and maintenance gravel in sufficient quantities to eliminate dust and maintain traffic.

Paved streets shall be maintained in a reasonable state of cleanliness and the CONTRACTOR shall remove accumulations of debris, dirt or mud caused by his operations. Removal shall be done in such a manner as to prevent the release of dust. CONTRACTOR shall provide and maintain an on-site water vacuum street sweeper for cleaning operations. These operations shall be done at the close of each day's operations or when requested by the ENGINEER or OWNER.

- E. Trucks used in hauling outside the Contract Limits shall be properly covered and comply with both MDOT and local ordinances. Trucks carrying sediment on roads off-site shall have their rear gates chained in addition to normal closures.
- F. The CONTRACTOR shall at all times provide emergency access to property in the vicinity of the construction for police and fire equipment, ambulances or other emergency vehicles to protect life, health and property.
- G. Where public roads, driveways, parking areas and sidewalks are encountered throughout the community, the CONTRACTOR shall maintain those portions affected by the construction operations in a passable condition until such time as final restoration of these improvements can be made as herein specified.
- H. In order to insure adequate street maintenance as outlined above, the CONTRACTOR may be required to deposit with the City of Northville or governing entity, a cash Road Protection Bond, if required, will be held in escrow until final release is given. In the event the CONTRACTOR fails or neglects to maintain the streets to the satisfaction of the city, the city shall have the required maintenance work done and the cost incurred shall be deducted from the Road Protection Bond. At the completion of the project, the city shall return the Road Protection Bond less any monies expended by the city and shall render to the CONTRACTOR an accounting of all monies so expended.
- I. Contractor is responsible for replacing any pavement and/or curb that is damaged during the project, per section 02940.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

DELIVERY, STORAGE AND HANDLING

PART 1	GENERAL
PAKII	GENERAL

1.01 SCOPE OF WORK

A. The general requirements for the delivery handling, storage and protection for all items required in the construction of the Work, as specified herein. Specific requirements, if any, are specified with the related item.

1.02 RELATED WORK

- A. Section 02300, Earthwork
- B. Section 02622, Erosion Control Blankets
- C. Section 02930, Landscaping

1.03 GENERAL TRANSPORTATION, DELIVERY, STORAGE AND PROTECTION

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation. Under no circumstances shall equipment be delivered to the site more than five (5) days prior to installation without written authorization from the ENGINEER.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the CONTRACTOR's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- F. Provide necessary equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e. OWNER or other contractors), perform inspection in the presence of the ENGINEER. Notify ENGINEER immediately both verbally and in writing, of any problems.

- H. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instructions shall be studied by the CONTRACTOR and reviewed by the ENGINEER. Instructions shall be carefully followed and a written record kept by the CONTRACTOR. Arrange storage to permit access for inspection.
- I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- J. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling.

1.04 DELIVERY, STORAGE, AND HANDLING OF PLANT OR SEED

- A. Pack, handle, and transport plant stock in a manner approved for that species and size by ENGINEER. Take precautions that are customary in good trade practice and as recommended by the supplier(s) to ensure proper transport and arrival of plant stock.
- B. Store wet packaged seed in a cool location as recommended by the supplier. Do not store seed longer than recommended by supplier (usually 3-7 days maximum). Do not allow seed to freeze.
- C. Adhere to all planting dates specified within the contract documents.
- D. Deliver and store seed mixtures in original sealed containers. Store seeds in weatherproof and rodent-proof enclosures. Remove seed from site when it becomes wet, moldy, or otherwise damaged.
- E. Label seed containers with the following minimum information:
 - 1. Name and address of supplier.
 - 2. Name of seed mix.
 - 3. Net weight.
 - 4. Date of production and/or shipment.
- F. All live stakes shall be kept in a shaded area of the site to prevent drying of materials. Live stakes shall be kept at temperatures as recommended by the nursery to maintain viability of materials.
- G. All woody plant materials shall be stored in a protected area on site away from storage of other construction materials that may damage plants. Under no circumstances shall woody plants be allowed to be stored on-site for more than 72 hours prior to planting without prior authorization from ENGINEER. All plants shall be sufficiently watered to maintain health and vigor.
- H. The ENGINEER shall reserve the right to refuse any plant material that is unacceptable upon

delivery to site.

- I. The following conditions shall render Plant Stock Unacceptable:
 - 1. Plant stock that has been in storage for an excessive period of time.
 - 2. Plant stock that has been in storage at an excessively high or low temperature.
 - 3. Plant stock displaying mold, decay, or physical damage.
 - 4. Plant stock stored in a manner not suitable for the material.
 - 5. Seeds in damaged packaging are not acceptable.
 - 6. Plant stock that is not correct genus, species, and cultivar as identified on the plant list will not be accepted without prior written approval from ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures.
 - 2. Inspection procedures.
 - 3. Final cleaning.
 - 4. Project as-built documents.
 - 5. Spare parts and maintenance materials.
- B. The following course of action shall be followed for project close out:
 - 1. Request for Intermediate Completion inspection.
 - 2. Development of Punch List by ENGINEER, acknowledged by CONTRACTOR.
 - 3. Completion of items on Punch List.
 - 4. Intermediate Completion Obtained.
 - 5. As-Builts provided.
 - 6. Substantial Completion as defined in Project Schedule.
 - 7. Final payment per General Conditions.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01040, Coordination.

C. Section 01300, Submittals.

1.03 AS-BUILT DOCUMENTS

- A. Maintain on site, one set of contract documents with actual revisions to the Work shall be recorded in these documents.
- B. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Field changes of dimension and detail.
 - 2. Details not on original Contract Drawings.
- C. Provide three (3) copies of certified as-built drawings by a professional surveyor and one (1) copy digital AutoCad file containing as-built information.
- D. Submit all documents (field, certified, and digital as listed above) to ENGINEER with Application for Final Payment.

1.04 CLOSEOUT PROCEDURES

A. Close out procedures shall be in accordance with General Conditions.

1.05 INTERMEDIATE COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Intermediate Completion, complete the following. List items below that are incomplete in request.
 - 1. Request an inspection for which the ENGINEER will complete a punch list to be acknowledged by the CONTRACTOR.
 - 2. Submit a list of items to be completed and corrected (punch list) as provided by the ENGINEER, the value of items on the list, and reasons why the Work is not complete.
 - 3. Advise Owner of pending insurance changeover requirements.
 - 4. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 5. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

AUDIOVISUAL TAPE COVERAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall provide audiovisual tape record of the construction site for the purpose of establishing, for the record, conditions prior to construction. The Contractor to determine areas within project vicinity to be recorded to document existing conditions prior to construction. Areas that may be included are: the gravel drive, the parking lot, curbs, 7 Mile Road, the pavilion, grills, benches, the pedestrian bridge, baseball diamonds, utility structures, signs, guardrails, any other improvements within the vicinity of the project work.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01040, Coordination.
- C. Section 01300, Submittals.

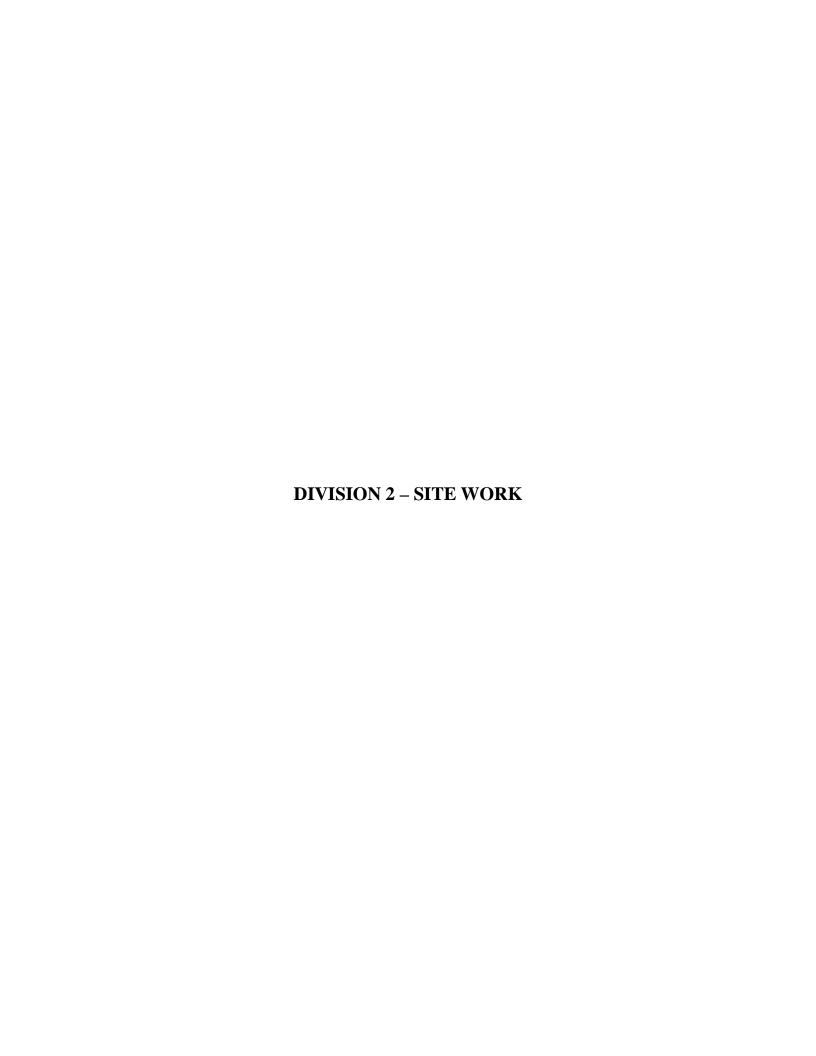
PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

- A. The Contractor shall furnish to the Owner THREE (3) copies of an audiovisual tape record of the construction site for the purpose of establishing, for the record, conditions prior to construction.
- B. The audiovisual taping shall be of a professional quality that will clearly log an accurate visual description of the existing conditions.
- C. The tape shall be in color, on digital format.
- D. The audiovisual taping shall clearly show the date and time of taping.
- E. The audiovisual taping shall be done within the two (2) week period prior to the preconstruction meeting and under the supervision of the Engineer.
- F. Any portion of the tape not acceptable for the determination of the above must be refilmed at no additional charge.

- G. Said tape shall be furnished one week prior to the preconstruction meeting and/or prior to placement of materials or equipment in the construction area.
- H. The tape coverage must include all existing cross streets, driveways, sidewalks, curbs, ditches shrubbery or other structures located on the construction site. Where construction may necessitate a local detour of traffic, additional panning of the full street right-of-way will be required. It will not be necessary to cover side street detours, only areas within the full street right-of-way of the street along which the construction is being done.
- I. Both sides of the entire construction site must be recorded with the rate of speed in the general direction of travel not to exceed 48 feet per minute. Panning rates and zoom-in/zoom-out rates shall be controlled sufficiently so that playback will produce clarity of the object viewed, and locations must be identified by audio and video means at intervals of not more than 50 lineal feet.
- J. The tape must be recorded during a time of good visibility. Taping should not be made during periods of precipitation, snow, leaves or other natural debris.
- K. To ensure proper perspective, the distance from the ground to the camera lens shall not be less than twelve feet, and the Owner shall have the authority to designate what areas may be omitted or added for audio-video coverage.
- L. The recording must be made on a continuous running tape on which sound and video information can be recorded.
- M. To preclude the possibility of tampering or editing in any manner, all video recordings must be by electronic means and display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day and year and be placed directly below the time information. The time information shall consist of hours, minutes, and seconds, separated by colons (e.g., 10:35:18). This transparent information will appear on the extreme upper left hand third of the screen.
- N. For ease of playback, the speed and electronics of the video tape shall be equal to that which is standard to the electronic industry.



GENERAL DEMOLITION

PART 1		GENERAL
1.01		SECTION INCLUDES
	A.	Demolition of designated structures, and removal of materials from site.
1.02		RELATED WORK
	A.	Section 01025, Measurement and Payment.
	B.	Section 01040, Coordination.
	C.	Section 01200, Project Meetings.
	D.	Section 01300, Submittals.
	Е.	Section 01500, Construction Facilities and Temporary Controls.
	F.	Section 01700, Contract Closeout.
	G.	Section 02100, Site Preparation.
1.03		SUBMITTALS
	A.	Demolition Plan. CONTRACTOR shall submit a detailed demolition plan explaining his methodology for accomplishing the work.
1.04		PROJECT RECORD DOCUMENT
	A.	Submit under provisions of Contract Closeout.

B.

Accurately record actual locations of capped utilities, subsurface obstruction.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable regulations for demolition, safety of adjacent structures, dust control, runoff control and disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, and hydrants without applicable permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

1.06 SCHEDULING

A. Schedule all demolition work to precede new construction.

PART 2 EXECUTION

2.01 PREPARATION

- A. Protect existing landscaping materials and structures which are not to be demolished.
- B. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as required.
- C. Mark location of utilities.

2.02 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and occupancies.
- B. Cease operation immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- D. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.

2.03 DEMOLITION

- A. Disconnect or remove, cap and identify designated utilities within demolition areas.
- B. Remove items completely as indicated on plans.
- C. Backfill areas excavated caused as a result of demolition, if required by Engineer.
- D. Rough grade and compact areas affected by demolition to maintain site grades and contours.
- E. Remove demolished materials from site and legally dispose of.
- F. Do not burn or bury materials on site. Leave site in clean condition.

SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

The CONTRACTOR shall coordinate his work with the OWNER.

A. Section Includes:

- 1. Tree removal/ clearing
- 2. Protection and salvaging of existing elements to remain
- 3. Trash and debris removal
- 4. Concrete wall removal
- 5. Chain link fence removal
- 6. Baseball diamond relocation
- 7. Soil erosion control
- 8. Remove, stockpile, and reinstall benches and parking bumper blocks as directed by OWNER

B. Related Sections:

- 1. Section 01025, Measurement and Payment
- 2. Section 01040, Coordination
- 3. Section 01200, Project Meetings
- 4. Section 01300, Submittals
- 5. Section 01500, Construction Facilities and Temporary Controls
- 6. Section 01700, Contract Closeout
- 7. Section 02060, General Demolition
- 8. Section 02220, Soil Erosion Control
- 9. Section 02300, Earthwork

1.02 JOB CONDITIONS

- A. Safety: Ensure safe passage of persons around area of site preparation work. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.
- B. Repairs: Promptly repair damages caused to adjacent facilities by site preparation work.
- C. Services Interruptions: Do not interrupt existing utilities serving occupied facilities, except when authorized by Owner. Provide temporary services, acceptable to Owner, during interruptions to existing facilities.
- D. Reused Materials: Carefully remove, store, and protect for reuse designated materials and equipment.

1.03 DEFINITIONS

A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of the Engineer in writing.

PART 2 PRODUCTS

2.01 SAFETY FENCE

- A. Fabric: ALPI Safety Fence, 4 foot height, by American Tenax Products or approved substitute.
- B. Posts: Heavy duty "T" posts, 6 foot long.
- C. Supplier: Construction Supply, Highland, Michigan; (313) 887-6767

2.02 SILT FENCE

- A. Material: As approved by ENGINEER.
- B. Supplier: As approved by ENGINEER.

PART 3 EXECUTION

3.01 DEMOLITION

A. General:

- Unless otherwise noted, demolition shall include the removal of items which would interfere with or be incongruous to construction of the project and as specified in the Contract Documents.
- 2. Use water sprinkling, temporary dust proof enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
- 3. Do not use water when it may create hazardous or objectionable conditions.

B. Verification of Conditions:

- 1. In company with the Owner and Engineer, visit the site and verify the extent and location of selective demolition required.
- 2. Carefully identify limits of selective demolition.
- 3. Mark interface surfaces as required to enable workmen also to identify items to be removed and items to be left in place intact.

C. Utilities:

1. Protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction.

D. Conditions to Remain:

- 1. Protect from damage all adjoining property and adjacent areas not scheduled for construction.
- 2. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to the start of work.

3.02 REMOVAL OF DEBRIS

- A. General: Rubbish or debris shall be removed from the site daily and legally disposed. No large quantities will be allowed to accumulate.
- B. Burning: No burning of rubbish or debris will be permitted.
- C. Salvaged Items: Stockpile all salvaged items for pick-up by Owner.

3.03 ADJUSTMENT OF EXISTING UTILITIES

A. General: All manholes, valve boxes, gate valves, etc., (if any) shall be adjusted to conform to the shape and grade of finished grade. This adjustment shall be in accordance with the regulating agency of the utility involved.

3.04 SOIL EROSION AND SEDIMENTATION CONTROL

A. General Requirements:

- 1. Public Act 346, the Soil Erosion and Sedimentation Control Act of 1972, must be followed. Should the local regulatory agency determine that the construction operations are in violation of the Soil Erosion Act, the Contractor shall take immediate action to remedy the situation.
- 2. Responsibility to render the site erosion free rests with the Contractor. Approval by the Owner of any method to accomplish this does not relieve the Contractor of full responsibility.
- 3. Delays due to shut down from non-compliance with the Soil Erosion Act are the responsibility and at the expense of the Contractor.

B. Operations:

- 1. The soil erosion measures shall be installed prior to any work.
- 2. Operations shall be conducted in such a manner as to reduce and contain erosion. The amount of time land is exposed to the elements by grading operations shall be the minimum.
- 3. Temporary sediment traps, diversion ditches, silt fence, turbidity barriers etc., shall be constructed at locations where necessary in a timely fashion so as to minimize sedimentation of water courses.

CLEARING AND GRUBBING

PART 1	GENERAL

1.01 SCOPE OF WORK

A. This section covers all clearing, grubbing, chipping and within the Contract Limits shown on the Drawing and as required, complete with cutting and removal of trees, shrubs, vegetation, stumps, logs, brush, roots, undergrowth, trash and other discarded materials and disposal of those materials.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 02060, General Demolition.
- D. Section 02100, Site Preparation.
- E. Section 02300, Earthwork.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable regulatory criteria for environmental requirements, disposal of debris, and use of herbicides, if required.
- B. Any trees 3 inches DBH or larger to be considered bat habitat. No trees of this size to be cut between April 1 and September 30 in any year to avoid take of Indiana Bat, a federally listed endangered species unless the tree is certified by a biologist to be not applicable habitat.
- C. Coordinate clearing work with utility companies.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 GENERAL

- A. Implement sedimentation and erosion control plan as called for on the drawing and prepared by CONTRACTOR for fulfillment of permit requirements.
- B. Clearing and Grubbing: The CONTRACTOR shall remove completely those trees marked

- for removal or as indicated on the Drawings. All woody debris shall be properly disposed of off-site. Some woody material may be stockpiled and re-used as woody material for proposed Vegetated Mechanically Stabilized Earth, as approved by the ENGINEER.
- C. Clearing and Grubbing: The CONTRACTOR shall remove completely and dispose of any other trees, stumps, brush, shrubs, hedges, roots, logs, debris, trash and discarded materials as indicated on the Drawings.
- D. Depth of Removal: For areas to be excavated, the trees, stumps, and roots shall be removed to a depth of not less than 12 inches below the final grade, or as approved by the ENGINEER.
- E. Removal of Trees, Stumps, and Other Vegetation: Where trees cannot be felled without danger to traffic or injury to other trees, structures, or property, these trees shall be cut down in sections. The removal of stumps and roots may be accomplished by the use of a shredding machine meeting the approval of the ENGINEER.
- F. The burial of trees, stumps and other vegetations, will not be permitted. The trees, stumps, and other vegetation may be hauled for proper disposal if not salvaged by the CONTRACTOR.
- G. Holes and Trenches: All holes and trenches remaining after the grubbing operation in embankment areas shall have the sides broken down or leveled, and shall be refilled with earthfill material.
- H. Salvaging Timber: Trees required to be removed and having a diameter of four (4) inches, or more, are classed as merchantable timber and shall become the property of the CONTRACTOR.
- I. Stabilization of Cleared Areas: The CONTRACTOR shall ensure that all cleared slopes shall be stabilized to prevent erosion. This may include the use of soil erosion matting to hold slopes in place, as approved by the ENGINEER.
- J. Salvage and stockpile logs pursuant to and meeting the Specifications contained within, section 03501 of these Specifications.

AGGREGATE MATERIALS

PART 1		GENERAL	
1.01		SECTION INCLUDES	
	A. B. C. D. E. F.	Aggregate materials for Access Aggregate materials for Step Pool Aggregate materials for VMSE with Wood and Stone Toe Aggregate materials for Rock Vane infill Aggregate materials for Sediment Capture Area Aggregate materials for Gravel Parking Lot	
1.02		RELATED WORK	
	A.	Section 01300, Submittals	
	B.	Section 01400, Quality Control.	
	C.	Section 02300, Earthwork.	
	D.	Section 02950, Habitat Structures.	
1.03		REFERENCES	
	A.	ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.	
	В.	ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.	
	C.	ASTM D2487 - Classification of Soils for Engineering Purposes.	
	D.	Michigan Department of Transportation (MDOT) 2003 Standard Specifications for Construction plus updates.	
1.04		SUBMITTALS FOR REVIEW	
	A.	Submittals: Procedures for placing aggregates.	
	В.	Samples: Submit 50 lb sample of each aggregate type less than 6". For larger material arrange for engineer to visit supplier quarry to inspect material prior to shipment to project site.	

1.05 SUBMITTALS FOR INFORMATION

A. Materials Source: Submit name of imported materials suppliers and most recent test results from supplier.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with the EGLE (formerly the MDEQ) permit.

PART 2 PRODUCTS

2.01 AGGREGATE MATERIALS

- A. Aggregates for Access: MDOT 21AA
- B. Aggregates for the Step Pool: MDOT 6AA, MDOT Class II Sand
- C. Aggregate for the VMSE with Wood and Stone Toe: 1"- 3" Limestone
- D. Aggregate for Rock Vane infill: MDOT Class II Sand
- E. Aggregate for the Sediment Capture Area drainage stone: Peagravel, MDOT Class II Sand
- F. Aggregates for Gravel Parking Lot: MDOT 21AA

2.02 SOURCE QUALITY CONTROL

- A. Section 01400, Quality Control.
- B. If tests indicate materials do not meet specified requirements, change material or material source and retest
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 STOCKPILING

- A. Stockpile materials on site at locations designated on the plans or by Owner.
- B. Do not stock pile in areas where aggregates can be washed into waterways or storm drains.

3.02 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

TOPSOIL

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Ripping of Subgrade
 - 2. Treatment of Topsoil to Remove Deleterious Materials
 - 3. Placement of Topsoil
 - 4. Blading of Topsoil Smooth After Placement
- B. Related Sections:
 - 1. Section 02300 Earthwork

1.02 REFERENCES

- A. ASTM American Society for Testing Materials:
 - 1. Test method for Laboratory Compaction Characteristics of Soil Using Modified Effort, ASTM D 1557-91.

1.03 DEFINITIONS

- A. Soil Subgrade: The soil surface on which topsoil is placed.
- B. Finished Grades: The final grade elevations indicated on the Grading Drawings.
- C. Aesthetic Acceptance of Grades: Acceptance by the ENGINEER in writing of the Aesthetic Correctness of the contours as observed without a survey instrument. Aesthetic Acceptance does not address whether an area drains properly, whether the areas are at the correct elevation, or whether it has been compacted properly.
- D. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of the ENGINEER in writing.

1.04 SUBMITTALS

A. Soil Test Report: Submit 3 copies of soil analysis data of all imported topsoil showing the following characteristics; resulting from a current agronomic and full textural class analysis of a topsoil sample collected from the actual soil proposed to be used. The results of the tests shall be submitted to the ENGINEER and must include sample date and reference the collection location.

- 1. Composition shall be in general accordance with ASTM D5268 subject to the following:
 - a. Gradation

<u>Texture Class %</u>	<u>Total Weight</u>	Average %
Sand (0.05-2.0 mm dia. range)	25 - 75	50
Silt (0.002-0.05mm dia. range)	15 - 40	27.5
Clay (< 0.002 mm dia. range)	15 - 30	22.5

b. Chemical Attributes

Chemical Attribute	<u>Range</u>
pH	6.8 - 7.5
Organic Matter	3% - 6%

Salinity EC<2 mmhos/cm

c. Topsoil shall contain the following minimum ammonium bicarbonate DPTA (chelate) extractable nutrients.

<u>Nutrient</u> <u>Concentration</u>

Nitrogen 5 ppm air dried basis

Phosphorous 5 ppm Potassium 30 ppm Iron (Fe) 5 ppm

1.05 SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily.
 - 2. Do not work soil when muddy or frozen.

1.06 WARRANTY

A. Warrant that topsoil layer shall be free of settlement below the finish grades for a period of one year from date of Final Acceptance.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil:

1. Quality: Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign materials., free of herbicide contamination

Rouge River AOC

02216-2

Section 02216 Topsoil and Topsoil Placement

- and other substances toxic to plant growth, stones over one-inch diameter, sticks, oils, chemicals, plaster, concrete and other deleterious materials.
- 2. The topsoil shall consist of sandy loam, with soil particles within the following percentages: clay; 0-25; silt; 25-50; sand; 50-70; decomposed organic matter; 5-10. The clay content is optional.
 - The soil shall have a soil acidity range between a pH 5.0 to pH 7.0. The soil salinity shall not exceed 3 millimhos per centimeter at 25oC (as described by USDA Circular No. 982).
- 3. Nematodes: Parasitic nematode population shall not be more than 200 per 50 cubic centimeters of soil.
- 4. Source: Imported from accepted source. The Contractor shall notify the Engineer of the source of topsoil not less than 10 days prior to excavation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Subgrade: Verify that subgrade has been graded to correct elevations.
- B. Verification of Conditions: Examine site and verify that conditions are suitable to receive work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.
- C. Unsuitable conditions: Before proceeding with work, notify Owner and ENGINEER in writing of all unsuitable conditions and conflicts.

3.02 PREPARATION

A. Ripping Subgrade:

- 1. Timing: Prior to placing topsoil, rip all areas to receive topsoil on the same day topsoil is placed.
- 2. Direction at Slopes of 5:1 or More: Rip soil parallel with slope contours in one direction.
- 3. Direction at Areas of Less Than 5:1 Slopes: Rip areas in two directions 90 degrees to each other.
- 4. Depth at Slopes of 5:1 or More: Rip to a depth of 6 inches unless indicated otherwise.
- 5. Depth at Areas of Less Than 5:1 Slopes: Rip to a depth of 12 inches unless indicated otherwise.
- 6. Tine Spacing: Space ripping machine tines at 18 inches on center.
- B. Clearing Subgrade: Clear subgrade of all stones larger than 2 inches, sticks, and other extraneous materials prior to placement of topsoil.

Rouge River AOC Johnson Creek Fish Hatchery Habitat Restoration Project C. Cleaning Topsoil: Remove stones larger than one inch, sub-soil refuse, tree and shrub roots, clods, sticks and other deleterious materials from topsoil prior to spreading.

3.03 PLACEMENT OF TOPSOIL

A. Location: Place topsoil at locations shown on the Drawings.

B. Depth:

- 1. Place four inches topsoil in disturbed areas as shown on the Drawings.
- 2. Make allowances for settlement, addition of soil amendment, and fine grading.

3.04 TOLERANCES

A. Finish Grades:

- 1. Grade all planting areas and lawns to within 0.10 foot of grades indicated on the Grading Plans, except bring grades along paving, curbs and other structures to within 0.02 foot of grades shown on the Grading Plans.
- 2. Transition grades along paving, curbs and other structures to areas of less strict tolerance over 6 feet distance.

3.05 SPILLAGE, DUST AND EROSION CONTROL

A. Spillage:

- 1. Take precautions to prevent spillage when hauling on or adjacent to any public street or highway.
- 2. In the event that spillage occurs, remove all spillage and sweep, wash, or otherwise clean such streets or highways as required by local City, County or State authorities.
- B. Dust Control: Use water trucks or temporary irrigation and take all precautions needed to prevent a dust nuisance to adjacent public or private properties.

C. Erosion Control:

1. Comply with the Soil Erosion and Sedimentation Control requirements listed under Section 02100.

3.06 FIELD QUALITY CONTROL

A. Field Observation Reviews by the ENGINEER: Coordinate and schedule with the ENGINEER.

3.07 PROTECTION OF TOPSOIL

- A. Drainage: Keep surface of the topsoil in such condition that it will drain readily and effectively.
- B. Compaction and Contamination: In handling materials and operating tools and equipment, protect the topsoil from damage by laying down planks, plywood, or other accepted protective devices where required and take other precautions as needed to protect topsoil from compaction and contamination.
- C. Vehicular Traffic:
 - 1. Do not allow vehicles to travel in a single track.
 - 2. If ruts are formed, blade rutted topsoil smooth.
- D. Storage of Materials: Do not store or stockpile materials on the topsoil.
- E. Excessive Compaction:
 - 1. Avoid excessive compaction of planting areas.
 - 2. Rip to 12-inch depth, rototil, and blade smooth areas which become compacted more than 85 percent as determined by ASTM D 1557-91.

SOIL EROSION CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification section provides certain requirements, techniques, and measures to minimize erosion damage to the construction site.

1.02 GENERAL

- A. In general, the CONTRACTOR shall conduct operations in such a manner as to limit any exposed area of any disturbed land for the shortest practicable period of time, and any sediment caused by soil erosion due to operations shall be restricted and reduced to a non-polluting minimum before it leaves the site.
- B. The CONTRACTOR shall comply with all requirements under the *Natural Resources and Environmental Protection Act, Act 451 of 1994 as amended by PA 504 of 2000*, and any local rules. Where these Specifications are more stringent, then these Specifications shall govern.
- C. All temporary stabilization work done shall be coordinated with Section 02940, Site Restoration, so that this work does not interfere with the final site restoration.

1.03 RELATED WORK

- A. Section 01300, Submittals.
- B. Section 02300, Earthwork.
- C. Section 02621, Geotextile for Separation.
- D. Section 02622, Erosion Control Blankets.
- E. Section 02930, Landscaping.
- F. Section 02940, Site Restoration.

1.04 INLAND LAKES AND STREAMS ACT

All waterway crossings are subject to the provisions of the *Part 301 of the Natural Resources and Environmental Protection Act of 1994, as amended, and the Administrative Rules.* The CONTRACTOR's activities shall adhere to the provisions of this act and the CONTRACTOR shall hold the Owner harmless from any violations, civil action, or penalties arising from the CONTRACTOR's actions.

B. The CONTRACTOR shall comply with all requirements of the EGLE (formerly the MDEQ) joint permit. A copy of the permit is attached herein.

PART 2 PRODUCTS

2.01 MATERIALS

- A Coordinate this work with Section 02940, Site Restoration.
- B Silt Fence Silt fence shall be standard geotextile product on wood stakes. Fabric height shall be 36" (6 inch buried, 30" above ground) and post spacing at 6.5 feet.
- C Erosion Control Blanket Erosion Control Blankets shall be used in accordance with Section 02622 and at locations shown on the plans.

Straw Bales – Straw Bales shall be installed as shown on the plans with minimum of 4" embedment and rebars, steel pickets or 2"x2" stakes driven through to secure.

PART 3 EXECUTION

3.01 EROSION PROTECTION

- A. In order to limit the length of time that the exposed area is subject to the elements and the subsequent conditions causing erosion, the CONTRACTOR shall take steps to minimize time and exposure and keep within the bounds of permits.
- B. Any unforeseen situations that may be encountered during the course of construction that may cause accelerated erosion and deposition of sediment into waterways will be controlled by methods that may include sediment traps. Any slope failures or development of gullies after construction has been completed will be corrected immediately.
- C. All sediment must be contained within the work area. Discharge to the Rouge River and associated branches containing sediment must be filtered through geotextile bags or similar treatment systems capable of removing suspended sediments prior to discharge.

3.02 SILT FENCE

- A. Silt fence shall be installed at locations as identified in the plans prior to any movement of soil.
- B. Silt fence shall be installed per manufacturer's recommendations. Silt fence should have the bottom of the geotextile be trenched into the grade a minimum of six inches and backfilled appropriately to ensure flow stabilization of surface drainage. Both ends of silt fence shall wrap up-slope slightly to hold flow of water in drainage feature.

C. Silt fence shall be maintained by specifications for the duration of the project. Silt fence shall not be removed until the end of the warranty period, as defined in Section 02930 Landscaping.

3.03 EROSION CONTROL BLANKET

- A. Erosion Control Blankets shall be used in accordance with Section 02622 and as indicated on the project drawings.
- B. Erosion Control Blankets shall be installed per manufacturer's recommendations.

3.04 STRAW BALES

- A. Straw Bales shall be installed as indicated on the project drawings prior to the movement of soil.
- B. Straw Bales shall be trenched in a minimum of 4 inches and staked with re-bars, steel pickets or 2"x2" stakes.
- C. Straw Bales to be used in conjunction with permeable membrane and silt fence for the dewatering containment area as shown on the plans.
- D. Straw Bales shall be maintained for the duration of the project and shall not be removed until completion of restoration activities and approval by the ENGINEER.

3.05 APPLICATION OF PERMANENT STABILIZATION

- A. Permanent stabilization shall be applied to all areas disturbed by the CONTRACTOR during completion of the work required by the Contract.
- B. The stabilization shall be accomplished within five days of completion of final grading, provided that earth change is made within the stated season for such stabilization.
- C. If the final earth change is accomplished at a time outside of the stated seeding season, temporary stabilization shall be applied within five days of completion of the final earth change and shall be replaced with permanent stabilization as soon after the following April 20, or before if the ground is workable.

3.06 APPLICATION OF TEMPORARY STABILIZATION

- A. Temporary stabilization shall be applied to areas where initial work has caused disturbance and the final earth change will not be completed immediately and to areas where the final earth change is completed between October 1 and April 20. Temporary cover seeding shall be utilized, such as annual rye.
- B. Temporary stabilization shall be applied to areas where the final earth change has been completed, including final grading and topsoil placement, between the dates

- of October 1 and April 20. The disturbed areas shall have mulch placed and anchored as described in the following paragraphs. After April 20, areas to be seeded shall be seeded through the mulch. Mulch shall be added and anchored as necessary to replace that lost prior to April 20.
- C. Areas disturbed by construction activities but on which the final earth change has not been made shall be graded to provide positive drainage and shall be temporarily stabilized to prevent erosion.
- D. Areas which receive an initial earth change and on which further work is to be done within three months shall be graded to provide positive drainage and shall have temporary stabilization placed and anchored.
- E. Refer to Section 02930, Landscaping and Section 02422, Erosion Control Blanket.

3.05 SEEDING FOR TEMPORARY AND PERMANENT STABILIZATION

- A. Site Preparation The seedbed immediately before seeding shall be firm but not so compact as to prohibit the seed from securing adequate germination or root penetration. Topsoil shall be replaced after grading operations for permanent stabilization. No topsoil is required for temporary stabilization. Tillage implements shall be used as necessary to provide at least a 3-inch depth of firm but friable soil, free of large clods and stones and other debris. All seeding shall be protected by mulching or erosion control blanket. Mulching work shall also be included in temporary stabilization. See Section 02930 of these specifications for details of permanent stabilization which include spreading topsoil, seeding, blanketing, establishment and guarantee.
- B. Seeding Dates Seed shall be applied from April 20 to October 1 for permanent stabilization and from April 20 to October 1 for temporary stabilization. The seeded areas shall be kept moist for fourteen (14) days to ensure growth. If the site is readied for seeding and during non-seeding months, it shall be protected by mulching. The site can be seeded later through the mulch. Seeding shall not be done on frozen soil, if the soil is snow covered, or when environmental conditions prohibit germination, as per Section 02930.

RIPRAP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section includes the furnishing and installation of riprap on subgrade approved by Engineer.

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment
- B. Section 01040, Coordination
- C. Section 01200, Project Meetings
- D. Section 01300, Submittals
- E. Section 01400, Quality Control
- F. Section 01500, Construction Facilities and Temporary Controls
- G. Section 01700, Contract Closeout
- H. Section 02220, Soil Erosion Control
- I. Section 02300, Earthwork

1.03 REFERENCES

- A. ASTM C136 Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- C. ASTM D2487 Classification of Soils for Engineering Purposes.
- D. Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction plus updates, Section 813 and 916.

1.04 SUBMITTALS FOR REVIEW

A. Submittals: Procedures for placing riprap

1.05 SUBMITTALS FOR INFORMATION

A. Materials Source: Submit name of imported materials suppliers and most recent test results from supplier.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with the EGLE (formerly MDEQ) permit.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store materials in a manner which will prevent deterioration or damage, contamination with foreign matter, damage by weather or elements, and in accordance with Manufacturer's directions.
- B. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. 4"-8" Limestone Riprap at Pedestrian Bridge
- B. 4"-6" Cobble for Step Pool
- C. 6"x12"x36" Limestone Slabs for Rock Vanes
- D. All materials above shall be free of dirt, debris, or deleterious material.

2.02 SOURCE QUALITY CONTROL

- A. Section 01400, Quality Control.
- B. If tests indicate materials do not meet specified requirements, change material or material source and retest
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 GENERAL

A. Riprap materials, placement and procedures shall conform to MDOT Section 813 and 916.

3.02 PREPARATION

A. Excavate or fill to the required subgrade. Compact and shape the subgrade for the bottom of riprap.

3.03 INSTALLATION

- A. General: Conform to slopes and dimensions indicated on the Drawings or as directed by Engineer.
- B. Grading: Excavate to finished grade of required section and slope.
- C. Placing Rock: As indicated on the Drawings and in accordance with this Section.
- D. Maintenance: Regrade and relay rock as necessary.
- E. Geotextile Fabric: Secure geotextile fabric area prior to placing riprap. Placement shall be per Section 02621.

3.04 STOCKPILING

A. Stockpile materials on site at locations designated on the plans or by Owner and shall be in upland areas outside of the 100 year floodplain boundary.

3.05 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

EARTHWORK

PART 1		GENERAL
1.01		SECTION INCLUDES
	A.	Excavation
	B.	Grading
	C.	Fill Placement
1.02		RELATED WORK
	A.	Section 01330, Construction Staking
	B.	Section 01400, Quality Control
	C.	Section 02207, Aggregate Materials
	D.	Section 02220, Soil Erosion Control
	E.	Section 02271, Riprap
	F.	Section 02621, Geotextile for Separation
	G.	Section 02930, Landscaping
	H.	Section 02940, Site Restoration
1.03		REFERENCES
	A.	MDOT- Michigan Department of Transportation, "Standard Specifications for Construction", current edition.
	B.	ASTM- American Society of Testing Materials, latest edition.
1.04		SUBMITTALS FOR REVIEW
	A.	Section 01300, Submittals:
		 Procedures for excavation and grading. Dredging Plan Procedures for placing backfill. Procedures for placing aggregates.

1.05

SUBMITTALS FOR INFORMATION

A. Materials Source: Submit name of imported materials suppliers and most recent test results from supplier if available.

1.06 QUALITY ASSURANCE

A. Codes and Standards

- 1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- 2. Provide for visual inspection of bearing surfaces by Engineer.
- 3. Testing and Analysis of fill soil: All testing shall be performed by the Contractor. All testing shall be performed in accordance with ASTM for verification of material compliance and sufficient compaction.
- 4. If tests indicate materials do not meet specified requirements, change material and retest.
- 5. Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring. All excavations shall be completed and maintained in a safe and stable condition throughout the total construction phase. Structure and trench excavations shall be completed to the specified elevations and to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Excavations outside of the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the Contractor in constructing and maintaining a safe and stable excavation.

1.07 DELIVERY AND STORAGE

- A. Deliver and store materials in a manner to prevent contamination. Storage areas will be as designated by the ENGINEER and OWNER. All site material shall be stored in areas that are not prone to flooding.
- B. Stockpile sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Prevent intermixing of soil types or contamination.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

1.08 SITE CONDITIONS

A. Site Information

1. Examine the site to ascertain the state and conditions under which work is to be done.

B. Existing Utilities

1. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork

- operations.
- 2. Contact MISS DIG min of 3 working days prior to starting work.
- 3. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the utility owner immediately for directions.
- 4. Cooperate with Owner and utility companies in keeping respective services and facilities in operation.
- 5. Repair damaged utilities to satisfaction of utility owner.

C. Protection of Persons and Property

- 1. Barricade open excavations occurring as part of this work in accordance with OSHA's Excavation standards 29 CFR Part 1926, Subpart P.
- 2. Protect utilities, pavements, and other facilities from damages caused by settlement, lateral movements, undermining, washout and other hazards created by excavation operations.
- D. Defective Work: If during progress of the work, testing indicates that materials do not meet specified requirements, remove defective work and replace at no cost to the Owner.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. General:

1. Soil materials shall be free of debris, roots, wood, scrap material, vegetative matter, refuse, soft unsound particles, and frozen, deleterious or objectionable materials.

B. Fill:

- 1. MDOT 6AA Filter Stone (Section 02207)
- 2. Peagravel (Section 02207)
- 3. 1" 3" Limestone (Section 02207)
- 4. 4" 6" Cobble (Section 02271)
- 5. 4" 8" Limestone (Section 02271)
- 6. 6"x12"x36" Limestone Slabs (Section 02271)
- 7. MDOT Class II Sand (Section 02207)
- 8. Topsoil: Per Section 02930, Landscaping

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine site and verify that conditions are suitable to receive work and that no defects or errors are present which would cause

defective installation of products or cause latent defects in workmanship and function.

- C. Unsuitable Conditions: Before proceeding with work, notify Owner and Engineer in writing of all unsuitable conditions and conflicts.
- D. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

- A. Protection of Existing Conditions:
 - 1. General: Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, irrigation systems, plant materials and paving on or adjacent to the site of the work.
 - 2. Barriers: Provide barricades, fences or other barriers as necessary to protect existing conditions to remain from damage during construction.
 - 3. Lines and Levels: Identify required lines, levels, contours, and datum locations.
 - 4. Utilities: Locate, identify, and protect utilities that remain from damage.
 - 5. Landscaping: Protect plant life, lawns, and other features remaining as a portion of final landscaping.
 - 6. Other features: Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
 - 7. Notification of Damages: Submit written notifications of all conditions damaged during construction to the Owner and Engineer immediately.

3.03 EXCAVATION

A. General

- 1. Excavate as required for construction of the work.
- 2. Where wet or otherwise unstable soil incapable of properly supporting the work, as determined by the Engineer, is encountered in the bottom of an excavation, such material shall be removed to at least 24 inches below bottom of work and replaced to the proper grade with select granular material, compacted as directed by the engineer. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the Owner.
- 3. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer shall be at the Contractor's expense. Backfill and compact unauthorized excavations with material of the same classification, unless otherwise directed by the Engineer.
- 4. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- 5. Protect bottom of excavations and soil adjacent to slopes from freezing.

- B. Stockpiling Excavated Material for Filling or Backfilling (If Needed)
 - 1. Stockpile excavated materials where directed by OWNER/ENGINEER until required for backfill or fill.
 - 2. Locate and retain fill materials away from edges of excavations.
 - 3. Dispose of excess soil material and waste materials legally.

C. Unauthorized Excavation

- Care shall be taken not to excavate below the depths indicated. Excessive or unauthorized excavations shall be filled at no cost to the OWNER.
- 2. Unauthorized excavations shall be filled with site fill as directed by ENGINEER.

D. Stability of Excavations

- 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction.
- 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

E. Shoring and Bracing

- 1. Shore and brace excavations as required to prevent cave-ins. Shoring and bracing shall be constructed of sound material, accurately placed, and securely braced. The CONTRACTOR shall assume full responsibility for adequate construction of shoring and bracing, and shall be responsible for the safety of all persons occupying excavated sites.
- 2. Provide shoring, including soldier beams and wood lagging or other protective measures, as may be necessary to protect adjacent structures, facilities and utilities at all times. Assume the responsibility for the adequacy of the design, installation and effectiveness of all shoring and other protective measures utilized, and repair damage resulting from failure to take adequate measures for protection of persons and adjacent property (including but not limited to, land, structures, facilities, pavements, utilities and grades). Remove shoring when no longer required.
- 3. Prior to installation, make every effort to determine the presence of existing underground conditions not indicated. If unknown services or obstructions are discovered, the CONTRACTOR shall notify the ENGINEER before proceeding.
- 4. Remove all shoring and bracing prior to backfilling.

F. Dewatering

- 1. Do not conduct work in standing or running water. At all times prevent runoff, surface water and subsurface or groundwater from entering the excavation or flooding the project site and surrounding area.
- 2. When water is present in the work area, dewater to maintain stability of in-situ and imported materials. Maintain water level below work to provide a stable excavation bottom. Use, as appropriate, sump pumps, well points, deep wells, geofabrics, perforated underdrains, or stone blankets of sufficient thickness to remove and control water in the trench. When excavating while depressing ground water, ensure the ground water is below the bottom of cut at all times to prevent washout from behind sheeting or sloughing of exposed trench walls. Maintain control of water in the excavation before, during, and after work installation and sufficient backfill has been placed to prevent damage or disruption to work. To preclude loss of soil support, employ dewatering methods that minimize removal of fines and the creation of voids in in-situ materials.
- 3. Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use excavations as temporary drainage ditches.

G. Utilities

- 1. Maintain, reroute or extend as required, existing utility lines to remain which pass through excavation area.
- 2. Protect utility services uncovered by excavation.
- 3. Cap off, plug or seal, discontinued utility services and remove from site within excavated areas.

3.04 BACKFILL AND FILL

A. General

1. Place acceptable soil material in layers to required subgrade elevations.

B. Timing:

- 1. Backfill excavations as promptly as work permits, but not until completion of the following:
- 2. Inspection, testing approval, and recording locations of underground utilities.
- 3. Removal of trash and debris.

C. Examination:

1. Verify structural ability of unsupported walls to support imposed loads by the fill.

D. Preparation:

- 1. Compact subgrade to density requirements of subsequent backfill materials.
- 2. Cut out soft areas of subgrade not capable of compaction in place. Backfill with clean fill and compact to density equal to or greater than requirements for subsequent fill material.
- 3. In fill areas, all debris shall be removed from the area to be filled and disposed of legally off-site.
- 4. Original ground on sloping sites shall be scarified and benched or otherwise treated to provide adequate bond and to prevent slippage of fill.

E. General Placement:

- 1. Fill material shall be free of debris or other detrimental material and shall have a reasonable moisture content when placed. If possible backfilling and grading shall be accomplished when the ground is frost-free and there is favorable weather. However if winter grading is necessary, all ice and snow shall be removed from the surface of the ground before the fill is placed. No frozen material will be allowed in the fill area or in the embankment being constructed. Any frozen material on a partially completed fill shall be removed before placing any more fill. This frozen material shall be stockpiled outside the grading limits until thawed. Thawed material from the stockpiled frozen material may be used in the fill and embankment areas.
- 2. After occurrence of heavy rain, do not operate on previously placed material or on approved excavations until materials have dried sufficiently to prevent occurrence of excessive rutting.
- Where excavations or previously placed material have been softened or eroded, remove soft and yielding material or otherwise objectionable or damaged areas and replace with compacted fill as directed by ENGINEER.
- 4. Place and compact materials in equal continuous layers not exceeding 6 inches in depth.
- 5. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content.
- 6. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification.
- 7. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- 8. Employ a placement method that does not disturb or damage other work.

F. Trench and Backfill Placement:

- 1. Backfill material, placement, and compaction shall be constructed in accordance with the specifications herein and the product manufacturer's published installation guides.
- 2. Movement of Construction Machinery. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced at Contractor's expense.

3.06 MATERIAL DISPOSAL

A. Unsuitable Material, Debris and Refuse

 Excess excavated material or material unsuitable for filling or grading operations, trees not indicated to remain on site, stumps, debris, miscellaneous refuse and other items indicated to be removed shall be disposed of off the Owner's property in compliance with local codes and ordinances.

E. Fill

1. Surplus excavated fill not required for backfilling or filling shall be disposed of off the Owner's property in compliance with local codes and ordinances.

3.07 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

3.08 PROTECTION OF FINISHED WORK

- A. Protect finished work from construction traffic or other means of damage.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 02411

METAL SHEET PILING

PART 1 GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. AISC S 329: Specification for Structural Joints Using ASTM A325 or A490 Bolts (Ninth Edition).
- B. AISC S 335: Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary (1989).
- C. ASTM A27: Steel Castings, Carbon, for General Application (1995).
- D. ASTM A328: Steel Sheet Piling (1998).
- E. ASTM A370: Mechanical Testing of Steel Products (1997).
- F. ASTM A572: High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality (1999a).
- G. AWS A5.18: Carbon Steel Electrodes for Shielded Metal Arc Welding (2001).
- H. AWS D1.1: Structural Welding Code Steel (2004).

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment.
- B. Section 01300, Submittals.
- C. Section 01600, Delivery, Storage and Handling.

1.03 SUBMITTALS

The following shall be submitted in accordance with Section 01300 "Submittals:"

- A. Selected Hot-Rolled Steel Sheet Piles: submit manufacturer's specifications which demonstrate that the selected hot-rolled steel sheet pile section will meet the requirements specified herein and shown on the drawings. Hot-rolled steel sheet piling shall comply with the physical and chemical properties as specified in ASTM A328 or ASTM A572, whichever is applicable. The Contractor shall submit detailed design analysis, calculations, shop drawings, and layouts for the selected hot-rolled sections, including any alternate tie rod spacing, all necessary miscellaneous steel, and special fabricated piles.
- B. Work Plan: Submit the means and methods to be used for required sheet pile construction. Include measures to be taken to protect partially completed work in

- the event of cessation of work. The Contractor shall submit pile driving templates and spacing for approval by the Engineer.
- C. Metal Sheet Piling: Detail drawings shall be submitted for all sheet piling including fabricated sections. They shall include complete piling dimensions and details, driving starting point and sequence and location of installed piling, and diametric pan layout. The detail drawings shall also include details and dimensions of templates and other temporary guide structures for installing piling. The detail drawings shall provide specific information with respect to the method of handling piling to prevent permanent deflection, distortion, or damage to piling interlocks.
- D. Pile Driving Equipment: Complete descriptions of sheet piling driving equipment including hammers, extractors, protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work.
- E. Pulling and Redriving: The proposed method of pulling sheet piling shall be submitted and approved prior to pulling any piling.
- F. Materials Testing: Mill certifications shall be submitted for all sheet piling intended for use under this contract. Also, required for submittal are certified materials test reports which demonstrate that the steel piling and all appurtenant metal materials meet the physical and chemical properties specified. These shall be submitted for each shipment, and identified with specific lots prior to installation.
- G. Driving: Records of the sheet piling driving operations shall be submitted after driving is completed. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations of installed piling. The Contractor shall record whether the piles are driven singly or in groups of two or more sheets. The driving records shall be furnished each day with the records of inspection. The format for driving records shall be as directed by the Engineer. Any unusual conditions encountered during pile installation shall be recorded and immediately reported to the Engineer.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Materials delivered to the site shall be new and undamaged, and shall be accompanied by mill certifications and certified test reports. The manufacturer's identification and mill certification mark shall be provided on each sheet pile delivered in accordance with the referenced specifications. The sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion, and damage to interlocks. Storage of sheet piling shall also facilitate required inspection activities. Piles of a different type or grade, shall not be intermixed in the stockpiles.
- B. Marking: Each sheet pile shall have its ASTM Specifications Number, steel grade and Section Identification number painted on or near each end.

PART 2 PRODUCTS

2.01 METAL SHEET PILING

- A. All steel sheet piling shall be formed from one homogeneous steel sheet of the required thickness. Sheet piling shall be as shown on the plan sheets and tabulated within the following table. The interlocks of sheet piling shall be free-sliding, provide a swing angle suitable for the intended installation but not less than 5 degrees when interlocked, and maintain continuous interlocking when installed. Sheet piling, including special fabricated sections shall be full-length sections, without splices, of the dimensions shown on the drawings. Fabricated sections shall conform to the requirements herein and the piling manufacturer's recommendations for fabricated sections. Sheet piling shall be furnished one foot longer than the length indicated on the drawings for cut-off purposes due to damage during driving. Each sheet shall be provided with a standard pulling hole located approximately 6 inches from the upper end of each pile unless otherwise directed.
- B. Hot-Rolled Steel Sheet Piles: The hot-rolled steel sheet piling shall meet or exceed the properties shown on the Drawings, fulfill the requirements of the Paragraph titled "Submittals" and be as approved by the Engineer.
- C. Any changes in pile layout as shown will not be allowed without appropriate design calculations which shall be submitted for approval. Alternate sections of piling will be allowed for use provided that all other requirements of the paragraph entitled "Submittals" are met, and that the substitutions is approved by the Engineer. The construction of the hot-rolled sheet pile walls using a section other than as shown and specified shall include all related adjustments to other elements of the structure to adapt it to the Contractor's hot-rolled design, and shall be provided at no additional cost to the Owner. All other requirements of these specifications for the steel sheet piling structure shall apply.
- D. Appurtenant Metal Materials: Metal plates, shapes, bolts, nuts, wales, and other appurtenant fabrication and installation materials for special piles shall conform to manufacturer's standards and to the requirements specified in the respective sheet piling standards and in Section 05500, "Miscellaneous Metal."

2.02 TESTS, INSPECTIONS, AND VERIFICATIONS

Requirements for material tests, workmanship and other measures for quality assurance shall be as specified herein.

A. Materials Tests: Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site. Testing of sheet piling for mechanical properties shall be performed after the completion of all rolling and forming operations as specified in ASTM A370.

2.03 FABRICATION OF SPECIAL PILES

A. Bolted Connections: Bolted connections shall be made with high-strength bolts in accordance with the applicable provisions of AISC S329 and S335.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Restrictions: No pile driving is allowed between sunset and sunrise. Pilings shall not be driving within 100 feet of concrete less than 7 days old.
- B. Notification Requirement: Contractor shall notify Engineer one week prior to driving sheet pile. Contractor shall provide Engineer with tentative driving schedule and confirm schedule 48 hours prior to installation of sheet piles.
 Contractor shall provide Engineer with weekly update on driving schedule until all sheeting has been installed.
- C. Pile Driving Equipment and Floating Plant: Pile driving equipment shall be in accordance with Contractor's submittal for equipment, as approved by the Engineer. Barges on which pile placement equipment is mounted shall be anchored against movement, independent from wall, during placement of piles.

D. Pile Driving Equipment

1. Driving Hammers: Hammers shall be steam, air, or diesel drop, single-acting, double-acting, differential-acting or vibratory type. The driving energy of the hammers shall be as recommended by the manufacturer for the piling weights and subsurface materials to be encountered.

D. Placing and Driving

- 1. Placing: Any excavation or engineered fill placement to subgrade elevation under dam apron structures required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located as shown on the drawings. Interlocks of piles shall be placed and driven with the ball end leading in the direction of the driving. Pilings shall be placed plumb with out-of-plumbness not exceeding 1/8 inch per foot of length and true to line. Temporary wales, templates, or guide structures shall be provided to ensure that the pilings are placed and driven to the correct alignment. Pilings properly placed and driven shall be interlocked throughout their length with adjacent pilings to form a continuous diaphragm throughout the length of run of piling wall. Special steel sheet piles shall be installed as shown on the contract drawings.
- 2. Driving: Pilings shall be driven with the proper size hammer and by approved methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths. Driving hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. Caution shall be taken in the sustained use of vibratory hammers when a hard driving condition is encountered to avoid interlock-melt or damages. The use of vibratory hammers should be discontinued and impact hammers employed when the penetration rate due to vibratory loading is one foot or less per

minute. The work of using an impact hammer in such circumstances shall be at no additional cost to the Owner. A protecting cap shall be employed in driving when using impact hammers to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced at the Contractor's expense. Pilings shall be driven without the aid of an air or water jet, as directed by the Owner and/or Engineer. Adequate precautions shall be taken to ensure that pilings are driven plumb. (If, at any time, the forward or leading edge of the piling wall is found to be out-of-plumb in the plane of the wall, the piling being driven shall be driven to the required depth and tapered pilings shall be provided and driven to interlock with the outof-plumb leading edge or other approved corrective measures shall be taken to ensure the plumbness of succeeding pilings.) The maximum permissible taper for any tapered piling shall be 1/8 inch per foot of length. The horizontal alignment of the steel sheet pile wall shall be within one (1) inch of required location after completion of driving and after assembly and tightening of wales. Pilings in each run or continuous length of piling wall shall be driven alternately in increments of depth to the required depth or elevation. No piling shall be driven to a lower elevation than those behind it in the same run except when the pilings behind it cannot be driven deeper. If the piling next to the one being driven tends to follow below final elevation it may be pinned to the next adjacent piling. If obstructions restrict driving a piling to the specified penetration the obstructions shall, to the extent deemed practicable, be removed or penetrated with a chisel beam at no additional cost to the Owner. Should boulders or other obstructions render it impracticable to drive a pile to the specified penetration, or if soil conditions are encountered which are resulting in damage to the piling by attempting to drive it to the required tip elevation, the Contractor shall thereupon notify the Owner and Engineer at the site and request direction. The Owner and Engineer will determine any changes in design or alignment of the pile structure that may be necessary to ensure the adequacy and stability of the structure. Upon notification of the Owner and Engineer's findings and determination, the Contractor shall proceed with the work in accordance with the Owner and Engineer's directive. Payment for the additional cost of any required changes will be made in accordance with applicable provisions of the CONTRACT CLAUSES. Piles driven out of interlock with adjacent piles or otherwise damaged shall be removed and replaced with other piles and the removing and retrieving shall be at the Contractor's expense. After piles are driven to the required bottom elevation, the piles shall be cut off to the required top elevation as shown on the drawings, and all sharp edges shall be ground smooth. A tolerance of one inch above the indicated top elevation will be permitted.

E. Cutting-off and Splicing: Pilings shall be cut off to the required top elevation when driven to the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance. Pilings driven below the required top elevation, pilings damaged by driving and cut off to permit further driving, shall be extended as required to reach the top elevation by splicing when directed by the Engineer at no additional cost to the Owner. If directed by the Engineer, pilings shall be spliced as required to drive

them to depths greater than shown on the drawings and extend them up to the required top elevation. Pilings adjoining spliced pilings shall be full length unless otherwise approved. If splices are allowed in adjoining pilings the splices must be spaced at least two feet apart in elevation. Should splicing of piles be necessary, the splice shall be made by an approved butt weld, making a full penetration of the pile section, or as otherwise directed or approved by the Engineer. Welding shall be as specified in AWS A5.18 and AWS D1.1. Ends of pilings to be spliced shall be squared before splicing to eliminate dips or camber. Pilings shall be spliced together with concentric alignment of the interlocks so that there are not discontinuities, dips or camber at the abutting interlocks. Spliced pilings shall be free sliding and able to obtain the maximum swing with contiguous pilings. Piling cut-offs shall become the property of the Contractor and shall be removed from the site. The Contractor shall cut holes in pilings for bolts, rods, as shown on the drawings or as directed. All cutting shall be done in a neat and workmanlike manner. A straight edge shall be used in cuts made by burning to avoid abrupt nicks. Bolt holes in steel piling shall be drilled or may be burned and reamed by approved methods that will not damage the surrounding metal. Holes other than bolt holes shall be ground smooth of all rough surfaces and be the proper size for rods and other items to be inserted.

- F. Inspection of Driven Piling: The Contractor shall visually inspect the interlocked joints of driven pilings extending above the water surface. The underwater portion of each interlock, from lake bottom to water surface, shall be inspected by means of a surface controlled remote underwater television camera. Such inspection shall be viewable on a monitor on site as the inspection takes place and shall be tape recorded on standard VHS cassettes. All footage shall be clearly identified by interlock location and elevations. The originals of all tapes shall be delivered to the Engineer at the completion of the taping. Damaged piles and piles found to be out of interlock shall be removed and replaced at the Contractor's expense. Splicing and repair of damaged piles will be not allowed.
- G. Pulling and Redriving: The Contractor shall pull selected piling after driving to determine the condition of the underwater portions of pilings when directed by the Engineer. The method of pulling shall be in accordance with the approved work plan. Any piling so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed and replaced at the Contractor's expense. Pilings pulled and found to be in satisfactory condition shall be redriven when directed by the Engineer.

3.02 CESSATION OF WORK

A. Whenever the work is discontinued for periods exceeding two (2) calendar days, the Contractor, before closing down operations, shall protect all the exposed partially complete work against damage. The Contractor's means and methods of providing such protection shall be as included in the approved work plan.

3.03 QUALITY CONTROL

A. Quality Control System: The Contractor shall establish and maintain a quality control system for all operations performed under this Section to assure

compliance with contract requirements and maintain records of its quality control for all operations performed, including, but not limited to, the following:

- 1. Quality of Materials.
- 2. Testing.
- 3. Placement and support of piling: locations, horizontal and vertical alignment, splicing, welding, elevations, and interlocks.
- 4. Adequacy of protection against damage for partially completed work.
- 5. Pulling of piling for inspection and test.
- 6. Observance of safety regulations.

END OF SECTION

SECTION 02621

GEOTEXTILE FOR SEPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section is applicable to the use of a geotextile for separation, as indicated in project drawings for the sediment capture area and pedestrian bridge area.

1.02 RELATED WORK

- A. Section 01300, Submittals
- B. Section 01600, Delivery, Storage and Handling

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D 123 Standard Terminology Relating to Geotextiles
 - 2. D 276 Standard Test Method for Identification of Fibers in Textiles
 - 3. D 4354 Practice for Sampling of Geosynthetics for Testing.
 - 4. D 4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
 - 5. D 4439 Terminology for Geotextiles.
 - 6. D 4491 Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 7. D 4533 Test Method for Index Trapezoid Tearing Strength of Geotextiles.
 - 8. D 4632 Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 9. D 4759 Practice for Determining the Specification Conformance of Geosynthetics.
 - 10. D 4751 Test Method for Determining Apparent Opening Size of a Geotextile.
 - 11. D 4873 Guide for Identification, Storage, and Handling of Geotextiles.

1.04 SUBMITTALS

- A. Submit the following:
 - 1. Certification: The contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile. The Certification shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Geosynthetic Accreditation Institute (GAI)- Laboratory Accreditation Program (LAP)
 - 2. American Association for Laboratory Accreditation (A2LA)

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Geotextiles labeling, shipment, and storage shall follow ASTM D 4873. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- B. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- C. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the geotextile.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. US Fabrics Inc 3904 Virginia Ave Cincinnati, OH 45227 800-518-2290 513-271-4420, fax http://www.usfabricsinc.com/
- B. Substitutions: Alternative product data may be submitted by the Contractor for Engineer review for equivalent products.

2.02 MATERIALS

- A. Geotextile:
 - 1. Geotextile shall be US Fabrics, Inc. product US 205NW, or approved equivalent.

2.03 QUALITY CONTROL

A. Manufacturing Quality Control: Testing shall be performed at a laboratory accredited by GAI-LAP and A2LA for tests required for the geotextile, at frequency meeting or exceeding ASTM D 4354.

- B. Geotextile properties, other than Burst Strength and Ultraviolet Stability shall be tested by NTPEP to verify conformance with this specification.
- C. Ultraviolet Stability shall be verified by an independent laboratory on the geotextile or a geotextile of similar construction and yarn type.

PART 3 EXECUTION

3.01 PREPARATION

A. The installation site shall be prepared by clearing, grubbing, and excavation or filling the area to the design grade. The river bottom on which the fabric is to be placed must be flat. Non-natural protuberances extending up from the bottom of the river shall be removed prior to placing the fabric to avoid damaging the fabric. Non-natural objects include, but are not limited to, pieces of concrete, rebar, or demolition debris.

3.02 INSTALLATION

- A. The geotextile shall be placed loosely with no wrinkles or folds, and with no void spaces between the geotextile and the river bottom. Successive sheets of geotextiles shall be overlapped a minimum of 24 in, with the upstream sheet overlapping the downstream sheet.
- B. Prior to covering, the geotextile shall be inspected by a certified inspector of the Engineer to ensure that the geotextile has not been damaged during installation. Damaged geotextiles, as identified by the Engineer, shall be repaired immediately. Cover the damaged area with a geotextile patch which extends an amount equal to the required overlap beyond the damaged area 24 inches.

END OF SECTION

SECTION 02622

EROSION CONTROL BLANKETS

1.01		SECTION INCLUDES
	A.	Material and installation of erosion control blankets.
1.02		RELATED WORK
	A.	Section 01300, Submittals.
	B.	Section 01600, Delivery, Storage and Handling.
	C.	Section 02220, Soil Erosion
	D.	Section 02300, Earthwork
	E.	Section 02930, Landscaping
	F.	Section 02940, Site Restoration
1.03		SUBMITTALS
	A.	CONTRACTOR shall submit the following to the ENGINEER:
		1. Product Certification: The CONTRACTOR shall provide to the ENGINEER a certificate stating the name of the manufacturer, product name, style number, and other pertinent information to fully describe the type of erosion control blanket. The Certification shall be attested to by

1.04 QUALITY ASSURANCE

2.

PART 1

GENERAL

A. CONTRACTOR shall provide adequate oversight and control of installation to assure quality of the installation.

Manufacturer's stapling pattern and instructions.

a person having legal authority to bind the Manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Erosion Control Blanket labeling, shipment, and storage shall follow manufacturer's specifications. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.

Manufacturer's installation instructions.

B. Each erosion control blanket roll shall be wrapped with a material that will protect from damage due to shipment, water, sunlight, and contaminants.

C. During storage, erosion control blanket rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the blankets.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. North American Green
 5401 St. Wendel-Cynthiana Road
 Poseyville, Indiana 47633
 1-800-772-2040
 http://www.tensarnagreen.com/
- B. Approved Equal

2.02 MATERIALS

- A. North American Green C125BN long-term erosion control blanket or approved equal for inner layer of Vegetated Mechanically Stabilized Earth (VMSE) encapsulated soil lifts, extending up channel slopes and over soil berm as shown on the Drawings, and on all slopes steeper than 1:6 (vertical:horizontal).
- B. North American Green C700BN extended-term erosion control blanket or approved equal for outer layer of VMSE encapsulated soil lifts, extending minimum of 10 feet from the top of bank.
- C. North American Green S75BN short-term erosion control blanket or approved equal for erosion control on slopes flatter than 1:6 (vertical:horizontal) or at locations shown on the Drawings.
- D. Staples for biodegradable nettings shall be 6-inch biodegradable wooden stakes designed specifically for securing erosion control blankets to soil.

2.03 QUALITY CONTROL

A. All materials shall be free of manufacturing defects and damages incurred during shipping, handling, and storage. Defective or damaged products shall be replaced at CONTRACTOR's expense.

PART 3 EXECUTION

3.01 PREPARATION

A. Final grade shall be achieved in installation area prior to installation.

B. Coordinate installation with Grading and Landscaping. Installation site shall receive topsoil and applicable seeding prior to installation.

3.02 INSTALLATION

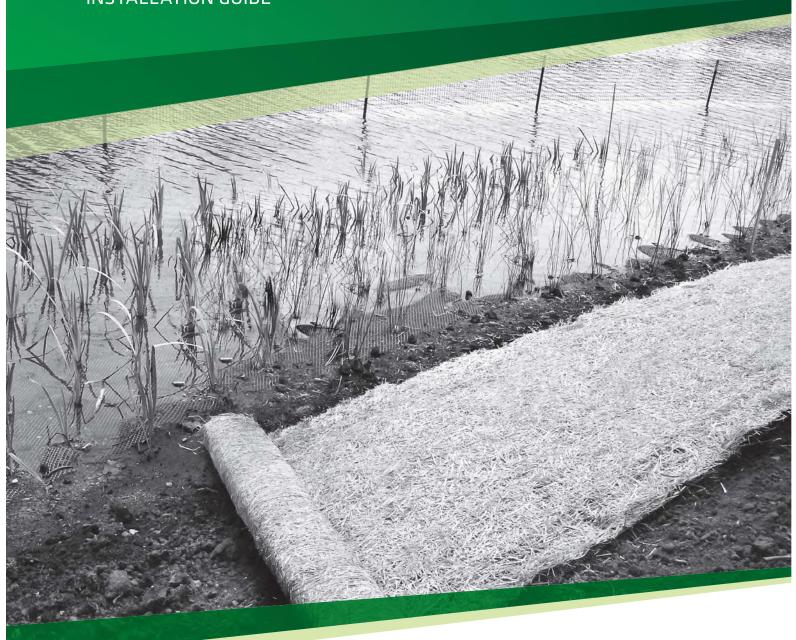
- A. North American Green C125BN or an approved equal shall be installed on inner layer of VMSE encapsulated soil lifts, on channel slopes, on soil berm, on point bar, and on all slopes steeper than 1:6. Install ECB perpendicular to stream channel using stapling pattern "D" per manufacturer's specifications except for on channel slopes and soil berm where stapling pattern "B" is acceptable.
- B. North American Green C700BN or an approved equal shall be installed on outer layer of VMSE encapsulated soil lifts. Install ECB perpendicular to stream channel using stapling pattern "D" per manufacturer's specifications.
- C. North American Green S75BN shall be installed only on slopes equal to or flatter than 1:6 as a general mulch blanket or erosion control measure. Install ECB using stapling pattern "A" per manufacturer's specifications.
- D. Install all erosion control blankets per manufacturer's specifications.
- E. Install erosion control blanket after topsoil placement and seeding.
- F. Erosion control blanket shall be installed flat, without buckles and slack, to maintain continuous contact with soil surface.
- G. Erosion control blanket shall be installed with end and edge overlaps according to manufacturer's installation instructions.
- H. Erosion control blanket shall be installed with grade tie-ins and terminations according to manufacturer's installation instructions. Loose or stapled free ends are not acceptable.
- I. Use two full roll widths with overlap along overbank areas of new stream channel, to establish a minimum coverage width of ten feet.

END OF SECTION



ROLLMAX™ ROLLED EROSION CONTROL

INSTALLATION GUIDE







RollMax[™] Installation Guidelines:

North American Green is the world's leading provider of performance-guaranteed erosion control solutions. For more than 25 years, our line of erosion and sediment control products has kept our customers on solid ground. Our short-term and long-term Erosion Control Blankets (ECBs) and Turf Reinforcement Mats (TRMs) keep you one step ahead of just about any erosion challenge.

North American Green provides everything you need to know for quick, accurate erosion control installation tailored to your site. From start to finish, the North American Green® RollMax System™ product installation instructions are based on extensive research and field-proven techniques to ensure project success. The following pages offer instructions and guidelines for several scenarios you may encounter during the installation of the RollMax System.

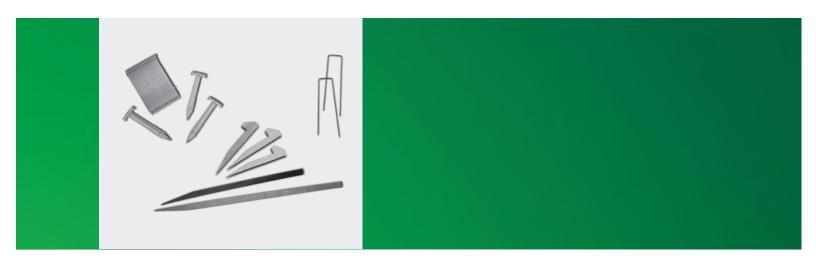
EXPERIENCE YOU CAN RELY ON

We are the industry leader when it comes to providing comprehensive erosion and sediment control and turf reinforcement solutions. We have developed integrated systems and products with the sole objective to ensure absolute customer satisfaction. Our products are backed by the most thorough quality assurance practices in the industry. In addition, we provide comprehensive design assistance for every North American Green system.

For additional installation assistance with the RollMax System, please visit **www.nagreen.com**, e-mail **info@nagreen.com**, or call **800-772-2040** and we will be happy to put you in touch with an erosion control specialist who can assist you.







Installation Made Easy

When under the pressure of severe conditions, even the best erosion control products can't function to their full potential without proper installation and anchoring. North American Green supplies a wide variety of fastener options for nearly every application and soil type.

For use in cohesive soils, wire staples are a cost-effective means to fasten RollMax™ System Rolled Erosion Control Products (RECPs). Available in 6 in., 8 in., 10 in. and 12 in. lengths, our U-shaped staples reach various depths to ensure adequate pull-out resistance. For installation using our handy Pin Pounder installation tool, 6 in. V-top staples or 6 in. circle top pins are available.

Our biodegradable BioStakes® are available in 4 in. and 6 in. lengths and provide an environmentally friendly alternative to metal staples. For an even more durable, deeper reaching yet all-natural anchoring option, our wood EcoStakes® are available in 6 in., 12 in., 18 in. and 24 in. lengths.

For severe applications needing the ultimate, long-lasting hold, try our 12 in. and 18 in. rebar staples, our 12 in. plastic ShoreMax® stakes, or our complete line of percussion earth anchors. The earth anchors reach deep into the soil strata to offer enhanced anchoring in the worst conditions. Our variety of earth anchors are designed for durability and holding power under extreme hydraulic stresses and adverse soil conditions.

STAPLE PATTERNS

Proper staple patterns must be used to achieve optimal results in RECP installation. We recommend the following general stapling patterns as guidance for use with our RECPs as seen in (Figure 1). Site-specific staple pattern recommendations based on soil type and severity of application may be acquired through our Erosion Control Materials Design Software (ECMDS®), www.ecmds.com.

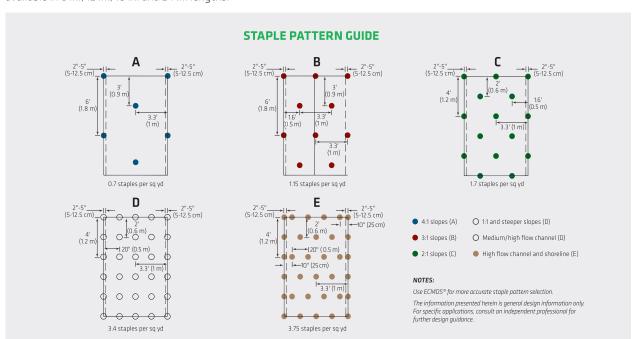
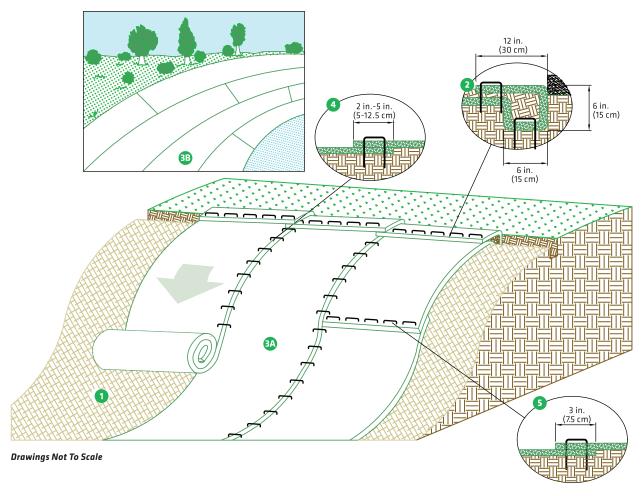


FIGURE 1

Slope Installation

The following slope guide outlines general recommendations for installing RollMax™ System temporary and/or permanent RECPs on sloping applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the slope severity.



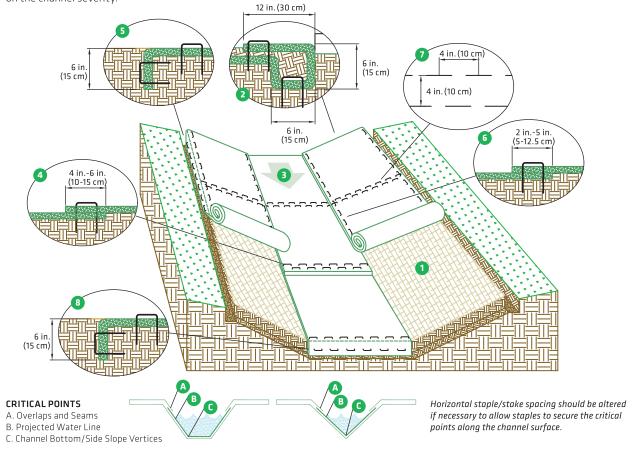
SLOPE INSTALLATION STEPS

- **1.** Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- 2. Begin at the top of the slope by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- 3. Roll the RECPs (3A) down or (3B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- **4.** The edges of parallel RECPs must be stapled with an approximately 2 in.-5 in. (5-12.5 cm) overlap depending on the RECP type.
- 5. Consecutive RECPs spliced down the slope must be endover-end (shingle style) with an approximate 3 in. (7.5 cm) overlap. Staple through overlapped area, approximately 12 in. (30 cm) apart across entire RECPs width.*

*NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Channel Installation

The following channel guide outlines general recommendations for installing RollMax System temporary and/or permanent RECPs in concentrated flow applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the channel severity.



Drawings Not To Scale

CHANNEL INSTALLATION STEPS

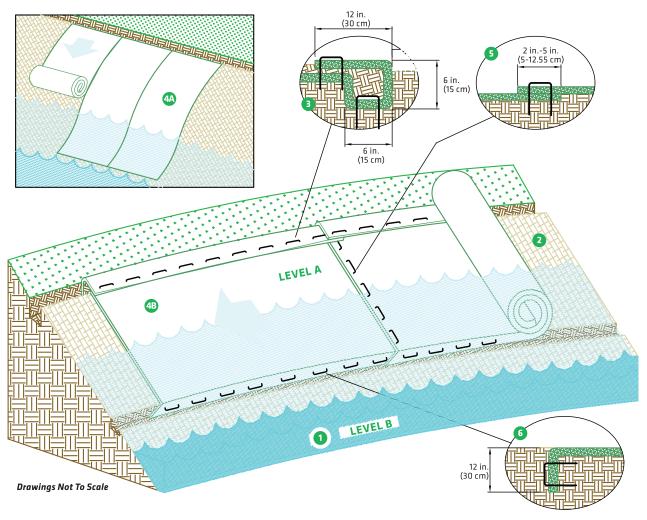
- Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- 2. Begin at the top of the channel by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. For supplemental scour protection, use RevetMax™ System ShoreMax® Mat at the channel/ culvert outlet as needed. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- 3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.

- 4. Place consecutive RECPs end-over-end (shingle style) with a 4 in.-6 in. (10-15 cm) overlap. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center to secure RECPs.
- 5. Full-length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.
- 6. Adjacent RECPs must be overlapped approximately 2 in.-5 in. (5-12.5 cm) (depending on RECP type) and stapled*
- 7. In high flow channel applications a staple check slot is recommended at 30 to 40 ft (9-12 m) intervals. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center over entire width of the channel.
- 8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.

*NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Shoreline Installation

Below are recommendations for installing RollMax System temporary and/or permanent RECPs along shoreline and stream bank applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the bank severity.



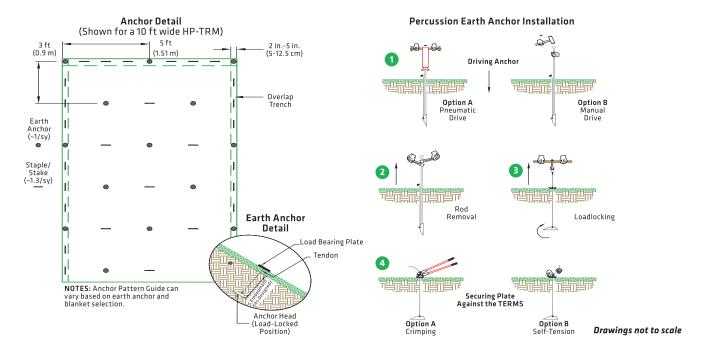
SHORELINE/STREAMBANK INSTALLATION STEPS

- **1.** For easier installation, lower water level from Level A to Level B before installation to allow bottom trenching.
- **2.** Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- **3.** Begin at the top of the shoreline by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- **4.** Roll RECPs either (A) down the shoreline for long banks (top to bottom) or (B) horizontally across the shoreline slope. RECPs will unroll with appropriate side against the

- soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- 5. The edges of all horizontal and vertical seams must be stapled with an approximately 2 in.-5 in. (5-12.5 cm) overlap. In streambank applications, seam overlaps should be shingled in the predominant flow direction.
- 6. The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12 in. (30 cm) deep x 6 in. (15 cm) wide anchor trench. Anchor the RECPs with a row of staples/stakes spaced approximately 12 in. (30 cm) apart in the trench. Backfill and compact the trench after stapling (stone or soil may be used as backfill). For installation at or below normal water level, use of a ShoreMax Mat on top of the RECP or geotextile may be recommended. Bottom anchor trench can be eliminated when using a ShoreMax Mat over RECP along the bottom edge.

NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Special Installation Instructions



ANCHORING DETAIL

Consult the *RollMax™ Turf and Earth Reinforced Mat Systems* (*TERMS*) *Installation Guide* for details about using earth anchors with RollMax RECPs. The performance of ground anchoring devices is highly dependent on numerous site/project specific variables. It is the responsibility of the project engineer and/or contractor to select the appropriate anchor.

- 1. Staples and/or stakes should be at least 6 in. (15 cm) in length and with sufficient ground penetration to resist pullout. Longer staples and/or stakes may be needed in looser soils.
- The percussion earth anchor assembly includes an anchor head, a tendon, a faceplate, and an end-piece device.
 Consult Earth Anchor specification for detailed information on assembly components and associated pull-out strength.

PERCUSSION EARTH ANCHOR INSTALLATION

- Insert the drive rod into the assembly's anchor head then use either a sledge hammer or a vibratory hammer to drive the anchor to the desired depth.
- After the desired anchor depth is achieved, retract the drive rod.
- **3.** Lock the anchor assembly by swiftly pulling the cable upwards until the anchor head rotates as signaled by sudden resistance to pulling. A hooked setting tool may be used to aid in this step.
- **4.** Secure the faceplate to the HP-TRM surface by locking the end-piece. If using a copper or aluminum stop, crimp the ferrule to secure. If using a self-tensioning end-piece (grip or wedge grip) set by simply tightening the end-piece against the faceplate. If needed, cut the remaining cable to desired length.

SEEDING AND VEGETATING

When using a Composite Turf Reinforcement Mat (C-TRM) with fiber components:

- Pre-seed prepared soils prior to the installation of the C-TRM. Install matting as directed. C-TRM does not require soil infill or a top dressing of seed. Overseeding may be done as a secondary form of seeding.
- 2. Sod may be installed in place of seeding on top of the C-TRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.

When using a woven HP-TRM:

- 1. Install the HP-TRM as directed prior to seed and soil filling.
- 2. Place seed into the installed HP-TRM. After seeding, spread a layer of fine soil into the mat. Using the flat side of a rake, broom or other tool, completely fill the voids. Smooth soil-fill in order to just expose the top of the HP-TRM matrix. Do not place excessive soil above the mat.
- **3.** Additional seed, hydraulic mulching, or the use of a temporary Erosion Control Blanket (ECB) can be applied over the soil-filled mat for increased protection.
- 4. Sod may be installed in place of seeding. Install HP-TRM, and soil-fill as outlined above. Place sod directly onto the soil-filled HP-TRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.
- **5.** Consult with a manufacturer's technical representative for installation assistance if unique conditions apply.



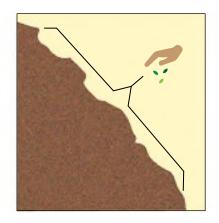
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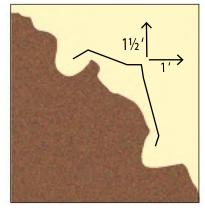
Coir Mat Installation Effective Erosion Control

The area selected for geotextile application should be graded uniformly by removing obstructions such as wood and clods, so that coconut geotextile comes in complete contact with soil. Seeds that adapt to the soil type and region should be mixed with manure or compost and spread uniformly along the slope. Compost or manure application is needed only if the soil is poor and the vegetation is required to grow in a shorter period of time.



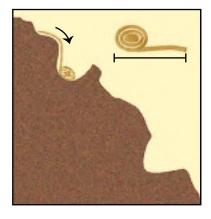
Seeding

For coir blankets or mats with small mesh/open space, seeding should be done prior to installation of the mat. For open weave mats and geotextile blankets with more mesh openeing space, seeding can be done after installation.



Trenching

A trench I-I/2 feet deep and I foot wide should be made at the top and bottom of the slope with the purpose of securing the mat with back-filled material.



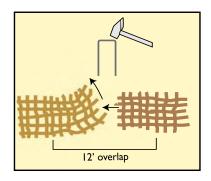
Measuring

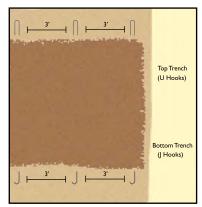
Cut the chosen mat/geotextile product into the required length for the project. The cut mats are unrolled from the top and laid along the slope (in the direction of the water flow). While measuring the project site, care should be taken to ensure that the mat is not stretched and that the measurement allows for contact of the coconut geotextile with soil.

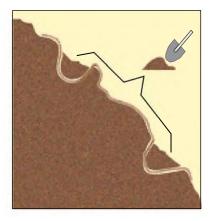


Coir Mat Installation Effective Erosion Control

Proper installation is key to the success of erosion prevention products. If installed improperly, even the best stormwater control and erosion prevention materials fail to serve their purpose. Therefore, importance should be given to secure staking, adequate fabric overlap, proper trenching, and skilled construction supervision during installation.







Review the <u>Coir Mat Product Flyer</u> for more information about coir mat erosion control.

Overlapping

It is recommended that coconut fiber geotextiles overlap a minium of 6 to 8 inches between adjacent parallel rolls, laid along the width, secured by staples or stakes. When mats are joined down the slope, place the upper mat over the lower mat end with a 12-inch overlap, and anchor with 2 staggered rows of staples with 12-inch spacing.

Anchoring

Once the mat has been laid out, it should be secured in the top trench by gauge eleven (11) "U" shaped metal staples. Wooden stakes can serve the same purpose. They are usually pegged at a gap of 36 inches (one meter). Keep a minium distance of 2 inches from the edge of the blanket to the center of the staples or stakes.

The open end of the mat at the lower end of the slope should also be secure by pegging "J" hooks to the bottom trench at about 36" (one meter), covered with cut fill.

After securing the top and bottom ends, the top and bottom trenches should be filled back with soil. Care should be taken that soil is compacted properly and no loose gaps exist which may cause rain water to go seep through the mat and flow down the slope.



SECTION 02881

DREDGING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Removal of sediment from Fish Hatchery Pond as shown in the contract plans. The Contractor may choose to remove sediment from Fish Hatchery Pond by either mechanical or hydraulic dredging techniques, or both.
- B. Establish and maintain staging area and dewatering containment area as shown on the contract plans.
- C. Maintain the return flow of dewatered effluent water back to Fish Hatchery Pond, ensuring return water does not cause erosion at any time.
- D. The CONTRACTOR shall dewater, load, and transport sediments/soils and debris removed from the lake. The CONTRACTOR shall ensure that sediments/ soils have a minimum solids content by weight of 30% and have no free liquids as determined by the paint filter liquid tests as described in the publication "Test Methods for Evaluations Solid Wastes, Physical-Chemical Methods" SW846. Any materials imported on to the site to aid in the dewatering or drying of sediment/soils shall be preapproved by the ENGINEER and shall be added at no cost to the OWNER.
- E. Disposal of dredged material at a Type II Landfill.

1.02 DEFINITION

- A. Hard material: Material requiring the use of special equipment for economical removal and includes boulders or fragments too large to be removed in one piece by the dredge.
- B. Removal: Excavation or dredging of materials of whatever nature encountered, whether wet, frozen, or otherwise, including dense tills, hardpan, organic materials, frozen materials, boulders, rock fragments or discarded materials which can be removed by construction equipment without drilling and blasting.

1.03 SUBMITTALS

A. Dredging Plan - Prior to bringing equipment to the project site, submit a Dredging Plan for review and approval by the ENGINEER detailing the proposed dredging

and sediment dewatering operations. Plan to include written procedures, schedules, and drawings as applicable and, as a minimum, address each of the following items:

- 1. Means and methods which will be used to perform sediment/soil and debris removal.
- 2. Sequencing and scheduling of removal including allowances for time required to conduct as built measurements/ soundings and inspection, as needed.
- 3. Sequencing and methodology for dewatering/drying, stabilization, loading, and hauling of sediment/silt and debris off site. Anticipated haul route to Type II landfill.
- 4. All temporary access required in the lake bottom and upland areas.
- B. Pre-dredging Survey- CONTRACTOR is expected to examine the site of work and conduct a pre-dredge survey prior to construction to verify existing conditions, including bathymetry prior to start of work. If CONTRACTOR's data differs from the contract plans, contact ENGINEER for resolution prior to beginning work.
- C. Notice of Start of Dredging Provide ten calendar day's advance written notice of the planned start of actual dredging operations.
- D. Submerged Utilities Indicate location and installation details of any submerged utilities.
- E. Soundings Submit drawings of surveys when nearing completion of dredging work by soundings or other approved survey or grade control means. After review by the ENGINEER, CONTRACTOR will be notified of any adjustments that may need to occur to comply with the proposed volumes of sediment removal. Soundings should be conducted in no more than 50-foot grid increments.
- F. Post-dredging Survey CONTRACTOR to complete post-dredging sediment elevation surveys for the work within Fish Hatchery Pond. ENGINEER to approve post-construction survey prior to CONTRACTOR demobilizing and proceeding with restoration activities.
- G. Weekly Report of Operations, as appropriate to the type of work being performed and progress made during that time. Each report shall attest that no overflow or discharge occurred from the dredging equipment while dredging, in transit from the dredging area to the unloading/staging area or in transit to the landfill for disposal. In the event an overflow or discharge occurs while dredging or while in transit, an oral notification shall be made within 4 hours of occurrence, and a complete written report on the incident shall be made to the Owner's Representative in shortest possible time, but no more than 24 hours.

1.04 CHARACTER OF MATERIALS

A. The material within the required dredging prism consists primarily of sediment that has accumulated in the lake over time. Material has been classified within the

attached geotechnical report.

B. Existing pond sediments may be soft and temporary support may be necessary to facilitate equipment access during restoration activities. Contractor to verify existing conditions prior to accessing the dredge areas. Any material placed to stabilize equipment must be clean imported material and removed to proposed grade elevations.

1.05 ARTIFICIAL OBSTRUCTIONS

A. The Owner has no knowledge of cables, pipes, or other artificial obstructions or of other material that would necessitate the employment of additional equipment for economical removal. However, this is an urban river system and it should be anticipated that "urban debris" may be encountered. Contractor should conduct any verification investigations required based on means and methods chosen for removal of the sediment. These investigations may allow the contractor to determine any actions that may be required to conduct the contractors dredging operations.

1.06 DREDGING GENERAL INFORMATION

A. All physical dredging will be conducted and paid for to the contract drawing plan contours as part of the contract unit price. An allowable project tolerance of up to 0.25-foot under or beyond the contract drawing plan contour will be considered acceptable (or contour – 0.25-foot or + additional 0.25-foot of cut).

1.07 PERMIT

A. The Contractor shall comply with conditions and requirements of the EGLE (formerly MDEQ) Joint Permit. The Owner has secured the permit for dredging and staging of material as indicated on the contract drawings. This permit is included in the Appendix.

1.08 ENVIRONMENTAL PROTECTION REQUIREMENTS

- A. The Contractor shall provide and maintain, during the life of the contract, environmental protective measures. Contractor shall also provide environmental protective measures required to correct conditions, such as oil spills or debris that occur during the dredging operations. Contractor shall comply with Federal, State, and local regulations pertaining to water, air, and noise pollution.
- B. Ensure that existing vegetation and trees adjacent to the pond are protected and preserved. Do not remove or damage any standing trees or vegetation on banks of the pond unless otherwise specified or indicated on the Drawings, without ENGINEER's written approval.

PART 2 PRODUCTS – Not Applicable

PART 3 EXECUTION

3.01 INSPECTION

A. Contractor shall inspect the work, keep records of work performed, and ensure that control measures (gages, targets, ranges, "ClaimVison", and other markers) are in place and usable for the intended purpose.

3.02 CONDUCT OF DREDGING WORK

A. Order of Work

1. The Contractor shall determine his order of work as part of the Contractor's Dredging Plan but should following the general sequence of completing all grading prior to the planting of emergent habitat areas.

B. Dredge Control

- 1. Contractor shall furnish, set, and maintain markers as needed to define the work and to facilitate inspection. Contractor shall establish and maintain gages in locations observable from each part of the work so that the depth may be determined.
- 2. CONTRACTOR may utilize wireless integrated dredge positioning technology, such as "ClamVision" or similar to control and record work progress. This information will be made available to ENGINEER upon request, and/or furnish as part of pay requests.

C. Equipment

1. Maintain dredge equipment to meet the requirements of the work.

D. Staging of Excavated Material

- 1. All equipment shall be operated, loaded and unloaded in such manner as to prevent overflow, spills, leaks, waste, or other loss of dredged materials between point of pick-up and point of deposition within the staging area. Hauling vessels shall have sufficient sidewall height and integrity to prevent drainage over or through the sides and bottom during hauling.
- 2. Method of Staging: The method employed by the Contractor in conveying dredged materials to the staging area shall be as approved by the Owner's Representative at all times. Temporary dumping or placement of materials outside of the staging area for subsequent re-handling is prohibited unless otherwise approved by the Owner's Representative.
- 3. Staging in Indicated Areas: The dredged materials shall be deposited within the staging area and dewatering containment areas as shown on the contract drawings. The Contractor is required to construct an area at the staging area to create sufficient capacity to contain sequenced materials to be dredged. (See

- Drawings). Placement of the dredged materials within the staging area shall be as specified and shown. Except as otherwise authorized by the Owner in writing, the method employed by the Contractor in depositing dredged materials in the staging area shall be as specified and shown.
- 4. Misplaced Material: Any material that is deposited elsewhere than in the places designated in this contract or approved by the Owner will not be paid for. The Contractor shall be required to remove such misplaced material at its expense and deposit it in the place designated in this contract or approved by the Owner.

E. Dewatering

1. Prior to removal of soil/sediment/debris from the site, mix air dry and/or drain the soil/sediment to have a minimum solids content of 30 percent and no free liquids as determined by the paint filter liquid test or other levels required by landfill to ensure acceptance, if more restrictive.

F. Salvaged Material

1. Articles of value brought to the surface during dredging operations shall remain or becomes the property of the Owner, unless otherwise agreed to by OWNER with the contractor and shall be deposited at a convenient location near the site of the work, as directed. ENGINEER to be notified of any salvaged material found during work operations.

3.03 MEASUREMENT

A. Prior, during, and after check surveys shall be made by the CONTRACTOR as specified here within. The Contractor shall make check surveys at least monthly, or to accompany pay applications, or as necessary to check grade status. Additional surveys may be taken by the Owner as he deems necessary. If additional prior surveys are required, due to the Contractor's operations, the cost of such surveys shall be paid by the Contractor.

3.04 FINAL EXAMINATION AND ACCEPTANCE

A. Examination

1. As soon as practicable after the completion of the entire work or any section thereof (if the work is divided into sections) as in the opinion of the Owner's Representative will not be subject to damage by further operations under the contract, such work will be thoroughly examined, with a post-dredge survey at the expense of the Contractor. Should any shoals, lumps or other lack of contract depth be disclosed by this examination, the Contractor is required to remove same and demonstrate through additional survey that work has been remedied. Additional survey required due to demonstrate compliance with the contract documents is at the expense of the Contractor. When the area is found to be in a satisfactory condition, it will be accepted finally.

B. Acceptance

1. Final acceptance of the whole or part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud, or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

END OF SECTION

SECTION 02930

LANDSCAPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. All labor, materials, equipment necessary to provide finished site revegetation. Work includes planting preparation, topsoil, seeding, planting accessories, live stake, and tree and shrub planting installation.

1.02 RELATED WORK

- A. Section 02220 Soil Erosion Control
- B. Section 02300 Earthwork
- C. Section 02622 Erosion Control Blankets
- D. Section 02931 Landscape Maintenance
- E. Section 02932 Landscape Performance and Warranty

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Plant Stock: This includes any live plant material that is to be introduced to Site regardless of its form or maturity. Plant stock may be referred to as woody, such as trees, shrubs, and some varieties of vines; or herbaceous, such as forbs, grasses, sedges, and some varieties of vines. Immature plant stock may be in form of germinated and ungerminated seeds. Mature herbaceous plant stock is generally in form of potted or containerized whole plants. Mature woody plant stock is generally in form of containerized, balled and burlapped, or bare root trees and shrubs.
- B. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- C. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material.
- D. Product Purchase and Delivery Documentation: Product order sheet and delivery manifest

1.05 SUBMITTALS

A. General: Meet requirements of Section 01300

- B. All substitutions, materials, or execution shall be approved by the OWNER/ENGINEER, in writing, a minimum of 1 month prior to installation. The OWNER/ENGINEER reserves the right to require a sample of substituted material(s) prior to approval for construction.
- C. Landscape Plan Submittals: CONTRACTOR to provide ENGINEER one month prior to initiation of landscape work and shall include:
 - 1. All relevant permits, licenses, and authorizations.
 - 2. Written detail for all planting methods, schedule and certificates.
 - 3. Live stakes: Submit live stake source and specifications.
 - 4. Plant Stock Certificates from woody plant stock suppliers which shall include:
 - a. Botanical name, including cultivar, and common name.
 - b. Quantity.
 - c. Size.
 - d. Type (B&B, Container, Bare Root...etc.)
 - e. Origin (Location grown).
 - f. Name, address, and phone number of supplier.
 - 5. Seed Certificates from seed suppliers which shall include:
 - a. Botanical names and common names.
 - b. Net weight.
 - c. Percentage of seeds by weights.
 - d. Purity of seed.
 - e. Amount of undesirable plant seeds present in mixture.
 - f. Germination percentage.
 - g. Date of production.
 - h. Date of packaging.
 - i. Location of packaging.
 - j. Name, address, and phone number of supplier.
 - 6. Erosion Control Blanket manufacturer and specifications.
 - 7. Name and address of mulch supplier(s) and a small physical sample of the material to be used.

1.06 QUALITY ASSURANCE

- A. Plant Stock Suppliers:
 - Obtain commercially available plant stock only from supplier or suppliers capable of
 providing quantities adequate to complete this project. Use plant stock that has been
 raised in Southeast Michigan nurseries under similar climatic conditions. When local
 sources are not available, plant stock shall originate within the same approximate
 latitude and the same USDA hardiness zone based on climatic characteristics. Plants

shall have grown to maturity under climatic conditions that are similar to those founds at site. Contractor is required to obtain data requested for required submittals from suppliers prior to use of stock. Suppliers shall be located in Southeast Michigan, when possible, and not outside of the Great Lakes ecoregion, which includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois, Indiana, and Ohio. No plant stock or seeds shall be accepted from outside the Great Lakes Ecoregion without prior written approval from the ENGINEER/OWNER.

B. Contractor Qualifications:

1. All landscaping work shall be performed by a contractor experienced in planting and establishing the specified plant stock herein. Personnel used to perform installation of plant materials shall have occupational experience in landscape planting projects similar to the scope and size of this project.

C. Regulatory Requirements:

- 1. Perform all work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- 2. Adhere to all federal, state, and local regulations for all phases of the project regarding erosion and sediment control measures.
- 3. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.
- 4. All plant stock, original and replacement, shall comply with state and federal Laws and Regulations with respect to inspection for plant diseases and insect infestations. Quality and size shall conform to the current edition of *American Standard for Nursery Stock* (ANSI Z60.1) as published by AmericanHort, formed in 2014 with the consolidation of the American Nursery & Landscape Association and OFA—The Association of Horticultural Professionals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Pack, handle, and transport plant stock in a manner that is customary in good trade practice to ensure proper transport and arrival of plant stock.
- B. Anti-Desiccant: Spray all evergreen or deciduous plant material as needed to protect the plant stock from desiccation during storage.
- C. Furnish standard products in unopened manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer.
- D. Store plant stock in a manner to prevent damage or deterioration. Plant stock stored for excessive lengths of time or at a time of year which is not suitable by standard horticultural practice shall not be accepted for planting. Store products with protection

from weather or other conditions that would damage or impair the effectiveness of the product.

- E. Store plant stock in aboveground locations in non-construction areas approved by OWNER/ENGINEER if not transplanted directly. Keep woody and herbaceous plant stock stored cool and sheltered from drying effects of direct sunlight, unless specifically required by plant stock, and prevailing winds. Place sufficient soil or mulch about roots of plant stock to protect them from desiccation and to provide nourishment during storage. Supply adequate water to maintain plant stock in a healthy and vigorous state suitable for transplanting.
- F. The following conditions shall render Plant Stock Unacceptable:
 - 1. Plant stock that arrives dried out, exposed to excessive heat, wind burn or that has been in storage for extended periods of time.
 - 2. Plant stock displaying mold, decay, or physical damage.
 - 3. Seeds in wet,damaged, or unlabeled packaging/containers are not acceptable.
- G. Deliver and store seed mixtures in original sealed containers. Store seeds in weatherproof and rodent-proof enclosures. Do not sue seed seed that becomes wet, moldy, or otherwise damaged during storage.
 - 1. Seed container labels should have the following minimum information:
 - a. Mix/Catalog name matching specified seed mixes.
 - b. Species botanical name and common name.
 - c. Net weight.
 - d. Percentages of seeds by weight.
 - e. Percentage of germination.
 - f. Amount of undesirable plant seeds present in mixture.
 - g. Pure Live Seed (PLS)
 - h. Date of production.
 - i. Name and address of supplier.
- H. The OWNER/ENGINEER shall reserve the right to refuse any plant material that is unacceptable upon delivery to site.
- I. Changes and/or substitutions of plant materials from what is specified on the Drawings are unacceptable without prior written authorization from OWNER/ENGINEER.
- J. All plant materials shall be inspected and approved by OWNER/ENGINEER prior to installation on-site.
- K. Do not lift or handle plants by tops, stems or trunks at any time. Do not bind or handle plants with wire or rope at any time.

1.08 SEOUENCING AND SCHEDULING

A. Installation

- 1. Installation of plant stock per the contract documents and this specification section.
- B. Maintenance Period per Section 02931.
- C. Warranty Period per section 02932.

PART 2 – PRODUCTS

2.01 IMPORTED SOILS

A. Topsoil: Refer to Section 02216 for topsoil specifications.

2.02 PLANT STOCK

- A. Furnish plant species and sizes as indicated on the Plans. Substitutions in plant species or size can be made only by written approval of the OWNER/ENGINEER.
- B. Plant stock shall be true to name as labeled. Plant species must be of native stock; horticultural cultivars will not be accepted.
- C. Use commercially available plant stock that has been raised in local (Southeast Michigan) nurseries under similar climatic conditions. No plant stock shall be accepted from outside the Great Lakes ecoregion (includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois, Indiana, and Ohio) without prior written approval from the OWNER/ENGINEER.
- D. Balled and burlapped trees shall be field grown in native soil for at least 12 months prior to harvest.
- E. Digging: Dig ball and burlap (B & B) plants with firm, natural balls of earth of diameter meeting requirements of ANSI Z60.1-2014, and of sufficient depth to include the fibrous and feeding roots.
- F. Plants shall be free of insects and diseases.
- G. Plants shall exhibit a balanced growth habit and shall show appearance of healthy growth and vigor.
- H. Trees shall have intact root balls with original earth firmly in place around roots. Non-containerized trees and shrubs shall be wrapped tightly and securely with untreated, biodegradable burlap and, if necessary, shall be tied securely with a biodegradable natural fiber twine such as jute to provide further protection for root ball. Plants balled using non-biodegradable burlap will not be accepted. Plants balled using wire baskets are acceptable given that the wire is cut back from the top and down the sides once the tree has been lowered into the hole.
- I. Acceptable nurseries include, but are not limited to:
 - 1. Marine City Nursery Co. China Twp, Michigan (810) 765-5533

- 2. Lodi Farms, Ltd. Ann Arbor, Michigan (734) 665-5651
- 3. Possibility Place Nursey Monee, Illinois (708) 534-3988
- J. Live Stakes: Shall be cuttings from live shrubs from species identified on Drawings ranging from 2 to 4 feet in length and ½ to 1½ inches in diameter. Stem cuttings shall be taken at least 24" from the branch tip. The top cut shall be ½" above a leaf bud. The bottom cut shall be ½" below a leaf-bud, and made at a 45 deg. angle. The basal ends of all cuttings must be marked clearly so installer can easily determine which end to plant. Cuttings shall be harvested when plants are dormant and must be kept covered and moist during transport and storage. Soaking the stakes before plantings greatly increases survival and growth rate. All cuttings shall be planted during dormancy.

2.03 SEED STOCK

- A. Use commercially available native seed that has been raised in local (Southeast Michigan) nurseries under similar climatic conditions. No seed shall be accepted from outside the Great Lakes ecoregion (includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois, Indiana, and Ohio) without prior written approval from the OWNER/ENGINEER.
- B. Native Seed Mix shall include species and pounds per acre (LB/AC) as indicated on the plans.
- C. Turf grass seed mix shall be a mix of turf forming grasses adapted to cool-season growth in the Midwest Region of the United States, adapted to part sun and part shade, with moderate drought tolerance. Seed at the minimum seeding rate of 10 lbs/ 1,000 square feet. Use higher rates if recommended by the supplier.
- D. Seed mixtures shall be blended by supplier at specified ratios of various species and shall be guaranteed by supplier as being true to specifications.
- E. It is acceptable to use more than one seed supplier if necessary to fulfill the specified species list, provided the rates in LB/AC are retained.
- F. Seed Mixes shall be "clean" according to industry quality standards. Seed mixes shall not contain foreign debris or insects.
- G. Seed Mixes shall contain no more than 1 percent by weight of undesirable plants species determined by standard purity tests, including but not limited to the species in Table 1.

Table 1. Undesirable plant species

Scientific Name	Common Name
Agrostis gigantea	redtop
Ailanthus altissima	tree-of-heaven
Alliaria petiolata	garlic mustard
Ambrosia artemisiifolia	common ragweed
Ambrosia trifida	giant ragweed

Scientific Name	Common Name
Arctium minus	common burdock
Barbarea vulgaris	yellow rocket
Berberis thunbergii	japanese barberry
Berteroa incana	hoary alyssum
Bolboschoenus maritimus	bulrush
Brassica nigra	black mustard
Celastrus orbiculatus	oriental bittersweet
Centaurea stoebe	spotted knapweed
Chenopodium album	lambs-quarters
Cirsium arvense	canada thistle
Cirsium vulgare	bull thistle
Convallaria majalis	lily-of-the-valley
Convolvulus arvensis	field bindweed
Cynodon dactylon	bermuda grass
Cyperus esculentus	yellow nutsedge
Daucus carota	queen-annes-lace
Digitaria ischaemum	smooth crab grass
Digitaria sanguinalis	hairy crab grass
Dipsacus fullonum	wild teasel
Dipsacus laciniatus	cut-leaf teasel
Elaeagnus umbellata	autumn-olive
Elymus repens	quack grass
Fallopia convolvulus	false buckwheat
Fallopia japonica	japanese knotweed
Frangula alnus	glossy buckthorn
Hesperis matronalis	dames rocket
Ipomoea purpurea	common morning-glory
Ligustrum vulgare	common privet
Lonicera maackii	amur honeysuckle
Lonicera tatarica	tartarian honeysuckle
Lysimachia nummularia	moneywort
Lythrum salicaria	purple loosestrife
Melilotus albus	white sweet-clover
Melilotus officinalis	yellow sweet-clover
Morus alba	white mulberry
Pastinaca sativa	wild parsnip
Phragmites australis	reed
Rhamnus cathartica	common buckthorn
Robinia pseudoacacia	black locust
Rosa multiflora	multiflora rose

Scientific Name	Common Name
Rumex crispus	curly dock
Scilla luciliae	glory-of-the-snow
Sinapis arvensis	wild mustard
Sonchus arvensis	perennial sow-thistle
Sorghum halepense	johnson grass
Stellaria media	common chickweed
Tanacetum vulgare	garden tansy
Taraxacum officinale	common dandelion
Vincetoxicum nigrum	black swallow-wort

- H. Seed shall contain no federal or state listed noxious or invasive weeds (an amount within the tolerance of zero percent) as determined by a standard purity test.
- I. Seed mix shall contain no Federal or State listed threatened or endangered plant species, unless otherwise authorized by ENGINEER.
- J. Seed mix substitutions can be made only by written approval of the OWNER/ENGINEER.
- K. Acceptable nurseries include, but are not limited to:
 - 1. Genesis Nursery Tampico, Illinois (815) 438-2220
 - 2. Michigan Wildflower Farm Portland, Michigan (517) 647-6010
 - 3. Ernst Seed Mercer, Pennsylvania (800) 873-3321

2.04 MULCH

- A. Mulch for all woody plant stock shall be composed of shredded hardwood bark. Mulch shall not contain any foreign material, debris, or compounds that may be detrimental to plant growth.
- B. Obtain OWNER/ENGINEER's approval prior to use of other types of mulch.

2.05 BACKFILL SOIL

A. Backfill soil for planting pits shall consist of 50% excavated material and 50% imported topsoil and shall be finely divided, loose, and free of clods. Lumps, stone, litter, and other foreign non-organic material larger than 1 inch shall be removed. Non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes shall also be removed. If additional soil is required, topsoil shall be used. Refer to Section 02216 for topsoil specifications.

2.06 ACCESSORIES

- A. Erosion Control Blanket: Refer to Section 02622 Erosion Control Blanket for soil erosion control blanket specifications.
- B. CONTRACTOR to wrap trees to protect against damage due to wildlife.

2.07 HERBICIDES AND PESTICIDES

- A. Any herbicide or pesticide intended for use on site must be approved by the OWNER/ENGINEER prior to use.
- B. Herbicides shall have Glyphosate as the primary active ingredient, unless otherwise approved by the OWNER/ENGINEER. Herbicides shall be approved for aquatic use where applicable.
- C. The use of pesticides is not recommended and will only be approved under extreme circumstances. Under no circumstances will pesticide application be allowed where the risk of surface water contamination exists unless the pesticide is approved for aquatic use and the Contractor has obtained the necessary permits to apply the approved herbicide in an aquatic environment.

2.08 EQUIPMENT

- A. Seeding Equipment: Obtain OWNER/ENGINEER's approval prior to use. The following requirements apply to specific equipment that may be used in seeding activities:
 - 1. Tractors and Crawlers: Shall have low-pressure flotation tires or broad tracks so that soil compaction is minimized in areas of Site preparation or seeding activities.
 - 2. Disc: In good repair with sound unbroken blades; weighted as necessary to achieve required tillage depth.
 - 3. Rollers or Cultipackers: Minimum 6-inch diameter rollers; of sufficient weight to pulverize clods of soil. To be used following rough grading on subgrade soils as a preparation for installation of seedbed soils.
 - 4. Airway Shattertyne: Roller tynes shall be 10 to 12-inch OD so that topsoil or organic-rich common fill and surface mulches are mixed into top 2 to 4 inches of subgrade. Weighting of this equipment should be minimal so as to avoid compaction of organic-rich common fill.
 - 5. Spinning Disc Seeder: When spinning disc seeders are used, mix individual seeds comprising mixture with an appropriate dispersal medium such as damp sterile sand or sawdust prior to sowing.
 - 6. Tractor-drawn or Mounted Seeders: Provide with a calibrated adjustable gate opening providing uniform flow over a width adapted to work and able to drop seed directly on prepared seedbed. Obtain OWNER/ENGINEER'S approval prior to using this system. Equipment shall be equipped with low pressure/high flotation tires or wide tracks which shall result in minimal disruption and compaction of graded wetland surfaces.
 - 7. Broadcast Seeders: Hand methods (cyclone seeders) and mechanical tractor-drawn methods.

8. No-Till Planters and Drills: Rangeland type grass drills and no-till rangeland grass drill planters shall be designed specifically for seeding native grasses and forbs.

PART 3 – EXECUTION

3.01 SEQUENCING AND SCHEDULING

- A. Submit Landscaping Plan Per section 1.04.C of this specification.
- B. Incorporate sequencing and scheduling aspects of Sediment and Erosion Control Plan, refer to Section 02220 Soil Erosion Control.
- C. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials on or adjacent to the site of the work. Schedule topsoil placement to permit seeding and planting operations under optimum growing conditions during specified planting time frames.
- D. Plant stock shall be installed according to the following time frame guidelines unless otherwise approved by ONWER/ENGINEER:
 - 1. Plant stock March 1 through May 15, and October 15 through November 30.
 - 2. Seeding: April 20, or as soon thereafter as soil is free of frost and in workable condition, through June 15, and September 15 through November 1.

3.02 PLANTING - GENERAL

- A. Do not proceed with planting in any area until necessary modifications and/or corrections determined by review completed and approved by OWNER/ENGINEER. Begin installation within timeframe as approved by OWNER/ENGINEER. If conditions detrimental to installation or plant growth or safety of planting crew are encountered, immediately notify OWNER/ENGINEER prior to planting.
- B. Maintain Sediment and Erosion Control Plan in conformance with applicable regulations and as approved by OWNER/ENGINEER. Refer to Section 02220 Soil Erosion Control.
- C. Protect finish-graded areas from rutting, impressions, or other damage by vehicular or worker traffic and erosion.
- D. Re-till areas compacted by construction equipment to a minimum depth of 6 inches. Rework and restore any areas compacted or damaged by rain, traffic, or other cause, prior to planting.
- E. Environmental Requirements
 - 1. Do not conduct seeding or planting operations when soil is frozen. Materials shall not be applied over snow or ice.

- 2. Do not conduct seeding or planting when the ground surface is wet or otherwise unable to support the equipment or workers necessary to conduct the seeding or planting without causing rutting, impressions, erosion, or other damages to final-graded areas and prepared seed bed.
- 3. Do not undertake seeding and planting activities during stormy weather when excessive precipitation may result in washing of seed away from location intended.
- 4. Do not install plant materials during periods of temperature extremes when atmospheric temperature may drop below 36 degrees F or rise above 90 degrees F.
- 5. Do not apply seeds, seed mixtures, slurries with seeds, or mulch when wind conditions are such that materials would be carried beyond designated areas or materials would not be uniformly applied.
- 6. When drought, excessive moisture, or other unsatisfactory conditions prevail, as determined by the OWNER/ENGINEER, the CONTRACTOR will stop work.

3.03 PLANT STOCK PLANTING

- A. Perform planting within time guidelines specified. Install species at locations as indicated on the drawings. For emergent habitat areas, review proposed plant locations and current water depths with OWNER/ENGINEER prior to planting. Adjustments may be made by the OWNER/ENGINEER based on water depths at time of planting.
- B. Obtain OWNER/ENGINEER's approval of soil bed preparation, Plant Stock Certificates, and layout before planting. No plant material shall be installed until it has been inspected and approved for planting by the OWNER/ENGINEER.
- C. The CONTRACTOR shall verify all plant locations with ENGINEER prior to installation. The ENGINEER reserves the right to adjust plant material locations to meet field conditions, without additional cost to the OWNER.
- D If obstructions are encountered that are not indicated, do not proceed with planting operations until alternative plant locations have been selected and approved in writing by the OWNER/ENGINEER. Where location or spacing dimensions are not clearly shown, request clarification by the OWNER/ENGINEER.
- E. If drainage conditions are questionable, the CONTRACTOR shall bring it to the attention of the OWNER/ENGINEER. Adjustment in planting pit locations or elevations to accommodate drainage concerns shall be approved by the OWNER/ENGINEER. Surface drainage problems discovered after plant material is installed shall be corrected to the satisfaction of the OWNER/ENGINEER at the CONTRACTOR's expense.
- F. Excavate planting pits as shown on the plans. Scarify sides of the pit prior to planting. Planting pits shall be dug deep enough to all the top of the root ball to be flush with final grade such that the tree installation does not change the final grade elevation on all surfaces that receive flowing water a part of the project design and as shown on Drawings. Never dig planting pits such that the top of the root ball is below final grade once installed.

- G. Remove non-biodegradable containers prior to planting. Remove plants from containers without disturbing the root ball. All circling roots (root bound) shall be cut and straightened to ensure correct directional root growth after planting.
- H. For balled and wrapped plant stock remove burlap and ropes from top 1/3 of ball after placing plant in pit. If metal baskets are present, remove baskets prior to installation unless this practice voids the plant material warranty.
- I. All plants shall be set plumb and straight, and centered in the pit. Plant root masses shall be in relation to finish grade as shown on the plans.
- J. After positioning plant, place specified backfill soil around root mass and compact lightly. When pit is 2/3 full, add water to soak thoroughly, then backfill to surrounding grade. Gently tamp soil firm.
- K. Create a continuous saucer around the perimeter of each plant pit to aid retention of irrigation water as shown on the plans.
- L. Water plant stock again immediately after planting such that root zone is thoroughly soaked and air pockets are removed.
- M. Any unused soil shall be removed from planting area to preserve finished grades.
- N. Any tree thrown out of plumb by wind action or other causes shall be replanted by loosening the soil around the root system and re-plumbing the tree or shrub by adjusting the position of the root system. Adjustment shall not be made by pushing, pulling, or restraining the trunk or stem. If, in the opinion of the OWNER/ENGINEER, damage to the root system has occurred as a result of re-plumbing, the tree or shrub shall be replaced by the CONTRACTOR.
- O. Provide specified mulch for woody plants. Mulch plants within 24 hours of planting or as directed by OWNER/ENGINEER. Do not mulch trees being planted in areas that receive flowing water by design as shown on Drawings.
- Prune each tree and shrub upon completion of planting to remove dead, broken, or injured branches and to compensate for any root loss incurred during transplanting. Retain natural shape of tree and leave as little stub as possible. Never cut leader. Cuts not made at the base of a branch shall be at a 45 degree angle and approximately ½ inch above a live leaf or bud. Pruning shall be done with a sharp tool to produce a clean cut without bruising or tearing the bark. Pruning shall be carried out in accordance with accepted arboricultural practices for size and species of vegetation.

3.04 SEEDING

- A. Perform seeding within time guidelines specified.
- B. All areas intended for seeding shall be free of weeds and other vegetation. Where necessary, infested areas shall be treated by the CONTRACTOR with an approved selective herbicide as approved by OWNER/ENGINEER.

- C. Seedbed soil shall be finely divided, loose, and free of clods. Lumps, stone, litter, and other foreign non-organic material larger than 1 inch shall be removed. Non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes shall also be removed.
- D. Use seeding rates as indicated on the plans unless alternative mixtures and application formulas are reviewed and approved by OWNER/ENGINEER.
- E. Follow seed manufacturer recommendations for seed installation. Seeding method selected shall ensure complete coverage of designated area. Re-seed areas with gaps in seeding at no additional cost to OWNER.
- F. Where obstacles, saturated soils, slopes, or other site conditions make use of mechanical seeding equipment impractical, hand broadcast techniques shall be used.
- G. For hand broadcasting, incorporate seed into soil to a maximum depth of ¼ inch after broadcasting by raking soil or chain dragging, then lightly compacting seedbed with roller or approved equivalent.

3.05 LIVESTAKES

- A. Plant livestakes as shown on Plans or as directed by ENGINEER.
- B. If not planted during normal dormant season live stakes must be kept moist and in cold storage until time of planting.
- C. Plant livestakes perpendicular to the ground surface. Install only when ground is not frozen. Push into ground by hand where possible. If necessary, create a pilot hole. Use dead blow hammer as needed.
- D. Orient the stake up, bury 2/3rds to 4/5ths of stake in ground, and allow at least 2 lateral buds to remain above ground. Firmly pack soil around each stake.
- E. Remove any dead or broken material from plant stock upon completion of planting.

3.06 SITE CLEAN UP

- A. Immediately clean up excess soil, mulch, or other debris and properly dispose of deleterious materials legally off-site in a manner consistent with local laws. Take necessary precautions to prevent contamination of clean areas as a result of cleaning operations.
- B. All paved areas shall be swept free of soil, stains and debris.
- C. Promptly remove equipment and unused materials at completion of activities in given area.
- D. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed. Restoration per Section 02940 Site Restoration.

E. CONTRACTOR to protect existing or previously installed vegetation during all work activities. If impact occurs, CONTRACTOR to immediately repair effected vegetation and aerate soil over root zone of negatively impacted vegetation.

3.07 PROTECTION OF FINISHED WORK

- A. Mark seeded and planted areas to prevent intrusion by foot traffic and/or equipment.
- B. Immediately restore areas disturbed by continuing operations.
- C. CONTRACTOR to provide wrap or other protection against damage due to wildlife.

3.08 PLANTING INSTALLATION ACCEPTANCE

- A. Planting Installation Acceptance Inspections and Acceptance Issuance:
 - 1. Upon completion of the landscape work, the CONTRACTOR shall request an inspection by the ENGINEER to determine whether all landscape work conforms to the requirements of the Contract Documents.
 - 2. All landscape work must be protected and maintained until Planting Installation Acceptance is issued.
 - 3. There will be no partial inspections unless in the case of live stakes. If live stake installation precedes installation of other landscaping, inspection may be requested following live stake installation. If live stake installation follows installation of other landscaping, inspection may be requested before live stake planting.
 - 4. If it is found that the landscape work does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the OWNER of all corrective work preventing Planting Installation Acceptance of the landscape work within five working days following the inspection. No partial approvals shall be given.
 - 5. Upon completion of the corrective work, the CONTRACTOR shall request another inspection to determine whether all landscape work conforms to the requirements of the Contract Documents.
 - 6. Corrective work followed by review will be required until the corrective work is found to be complete and acceptable by the OWNER.
 - 7. The CONTRACTOR shall reimburse OWNER for expenses and fee required to have OWNER make additional field trips after the second inspection.
 - 8. When the ENGINEER determines that the landscape work conforms to the requirements of the Contract Documents, the CONTRACTOR will receive a written notification of Planting Installation Acceptance within five working days following the Inspection.

9. The Maintenance Period will commence upon the date specified by the notification of Planting Installation Acceptance. Refer to Section 02931 for Landscape Maintenance.

END OF SECTION

SECTION 02931

LANDSCAPE MAINTENANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. All labor, materials, equipment necessary for maintenance for installed landscaping following planting installation acceptance. Maintenance activities include:
 - 1. Weed Control and Prevention
 - 2. Pest Control and Prevention
 - 3. Disease Control and Prevention
 - 4. Pruning of Plant Material
 - 5. Replacement of plants or areas not meeting the performance requirements.
 - 6. Watering Plant Material

1.02 RELATED WORK

- 1. Section 01025 Measurement and Payment
- 2. Section 01040 Coordination
- 3. Section 01700 Contract Closeout
- 4. Section 02930 Landscaping
- 5. Section 02932 Landscape Performance and Warranty

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- B. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material.
- C. Landscape Maintenance Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance of the installed plantings has been satisfied and for the duration of the required maintenance period.

1.05 SUBMITTALS

A. General: Meet requirements of Section 01300

- B. The CONTRACTOR shall submit the Maintenance Plan a minimum of 30 days of beginning the maintenance period.
- C. Requirements of Section 02930 apply to any replacement plantings installed during the maintenance period.

1.06 QUALITY ASSURANCE

A. Contractor Qualifications:

- 1. Maintenance Contractor: Minimum 5 years of experience in maintenance of native landscape projects.
- 2. Maintenance Supervisor: Minimum of 10 years of experience in landscape maintenance supervision, with experience or training in native seeding, landscaping, and management; pest control, soils; fertilizers; and plant identification.
- 3. Labor Force: Thoroughly familiar and trained in the work to be accomplished and perform the task in a competent, efficient manner acceptable to the OWNER.
- 4. Supervision: The foreman shall directly employ and supervise the work force at all times.
- 5. Notification of Change in Supervision: Notify OWNER of all changes in supervision.
- 6. Identification: Provide proper identification at all times for landscape maintenance firm's labor force.

B. Regulatory Requirements:

- 1. Perform all work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- 2. Adhere to all federal, state, and local regulations for all phases of the project regarding erosion and sediment control measures.
- 3. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.
- 4. All plant stock, original and replacement, shall comply with state and federal Laws and Regulations with respect to inspection for plant diseases and insect infestations. Quality and size shall conform to the current edition of *American Standard for Nursery Stock* (ANSI Z60.1) as published by AmericanHort, formed in 2014 with the consolidation of the American Nursery & Landscape Association and OFA—The Association of Horticultural Professionals.

5. Provide for all inspections and permits required by Federal, State, or local authorities in furnishing, transporting, and installing of all agricultural chemicals.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Requirements of Section 02930 apply to any replacement plantings installed during the maintenance period.
- B. Abide by Federal, State, or local authorities in furnishing, transporting, storage, handling and installing of all agricultural chemicals

1.08 SEQUENCING AND SCHEDULING

- A. Installation per Section 02930.
- B. Maintenance Period
 - 1. Begins with written Planting Installation Acceptance by the OWNER/ENGINEER as defined in Section 02930.
 - 2. Continues through number of growing seasons or months as specified in the Contract Documents. (Growing season is May 1-October 15.)
 - 3. During the Maintenance Period the work force shall be present at the project site as often as necessary to perform specified maintenance in accordance with the accepted maintenance plan, but at a minimum once per month throughout the growing season.
- C. Warranty Period per Section 02932.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All replacement material:
 - 1. Match existing. See Section 02930 and written approvals for substitutions.
 - 2. For plant stock, match existing genus, species, and size. See Section 02930 and written approvals for substitutions.
 - 3. Meet requirements of these specifications and Section 02930.
- B. Herbicides, Insecticides, and Fungicides:
 - Legal commercial quality materials with tracker dye with original manufacturers' containers, properly labeled with guaranteed analysis, as recommended by licensed applicators.

- C. Any herbicide or pesticide intended for use on site must be approved by the OWNER/ENGINEER prior to use.
- D. Herbicides shall have Glyphosate as the primary active ingredient, unless otherwise approved by the OWNER/ENGINEER. Herbicides shall be approved for aquatic use where applicable.
- E. The use of pesticides is not recommended and will only be approved under extreme circumstances. Under no circumstances will pesticide application be allowed where the risk of surface water contamination exists unless the pesticide is approved for aquatic use and the Contractor has obtained the necessary permits to apply the approved herbicide in an aquatic environment.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

A. Maintenance Plan:

- 1. The Maintenance Plan shall detail the CONTRACTOR's technical approach to completing the maintenance period work required by the contract documents while providing the best value to the OWNER.
- 2. The CONTRACTOR shall submit the Maintenance Plan within 30 days following issuance of written acceptance by OWNER or earlier. No adjustments for time or money will be made if resubmittals of the Maintenance Plan are required due to deficiencies in the plan.
- 3. The Maintenance Plan shall coordinate different work items and address the technical requirements listed in the specifications, drawings, and permits to ensure undesired plant species are not establishing in the work area and the desired species are maintained and replaced. The Maintenance Plan shall include, but is not limited to, the following:
 - a. Means and methods for watering, weeding, pest control, inspection, reporting and replacement of plantings.
 - b. Site inspection forms.
 - c. Vegetation maintenance log (e.g. hours and work performed each visit).
 - d. Herbicide/Pesticide application forms.
 - e. Inspector license qualifications and experience.

B. Maintenance Period

1. Begins with written Planting Installation Acceptance by the OWNER/ENGINEER, as defined in Section 02930.

- 2. Continues through two full growing seasons. (Growing season is May 1-October 15) or receipt of Landscape Maintenance Acceptance.
- 3. During the Maintenance Period the work force shall be present at the project site as often as necessary to perform specified maintenance in accordance with the accepted maintenance plan but at a minimum once per month throughout the growing season.

C. Protection of Existing Conditions:

- 1. General: Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities plant materials on or adjacent to the site of the work.
- 2. Barriers: Provide barricades, fences or other barriers as necessary to protect existing conditions from damage during maintenance operations.
- 3. Hazardous Operations: Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing trees.
- 4. Notification: Give written notification of all damaged plants and structures.
- 5. Replacement of plant material:
 - a. Replace existing plants which are damaged during maintenance period with plants of the same species and size as those damaged at no cost to the OWNER.
 - b. Replace existing or replaced plants which are not thriving during maintenance period with plants of the same species and size at no cost to the OWNER.
 - c. Plants considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

3.02 TREE AND PLANT MAINTENANCE

Maintenance during the maintenance period shall include but not be limited to:

- A. Notify OWNER/ENGINEER prior to and following any maintenance activity.
- B. Maintenance activities should occur at a minimum of once per month, or more if required during the growing season.
- C. Final Acceptance of work of this Section will be subject to acceptance by OWNER/ENGINEER at end of the maintenance period.
- D. Inspect all plant materials regularly for signs of stress and damage.

E. Watering:

- 1. Watering of all plant material. For optimum plant growth, plant material shall be kept moist (1" total water per week, including rainfall) until seeded vegetation is 4" high.
- 2. Maintain watering basins around all trees so that enough water can be applied to establish moisture through major root zones.
- 3. Adjust frequency and length of time for watering cycles according to changing soil and weather conditions.
- 4. Maintain originally specified depth of mulch to reduce evaporation and frequency of watering.

F. Rills, Gullies, and Sheet Erosion

- Rills, gullies, and sheet erosion caused by eroded soil will be repaired. Woody plants and/or seeded areas impacted will be repaired and replanted as needed. Damaged or ineffective erosion control blankets or mulch shall also be replaced at the time of reseeding and/or replanting of the eroded area.
- G. Settled or Leaning Plants: Reset plants to proper grades or upright position.

H. Weed Control:

- 1. Weeding and control of undesirable plants by approved methods. Weed whip annual weed species prior to seed set. Spot spraying or hand wicking of an herbicide application may be required to deter aggressive, persistent, biennial or perennial nonnative species. Avoid herbicide contact with native plant material.
- 2. Use only legally accepted herbicides to control weed growth. Aquatic areas require herbicides approved for aquatic use. Appropriate Michigan Environment, Great Lakes and Energy (EGLE), formally MDEQ, Aquatic Nuisance Control Permits are necessary.
- 3. Avoid frequent soil cultivation/disturbance that destroys shallow roots and breaks the seal of pre-emergent herbicides.
- 4. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.
- 5. Undesirable plants include, but are not limited to:

Scientific Name	Common Name
Agrostis gigantea	redtop
Ailanthus altissima	tree-of-heaven
Alliaria petiolata	garlic mustard
Ambrosia artemisiifolia	common ragweed
Ambrosia trifida	giant ragweed
Arctium minus	common burdock
Barbarea vulgaris	yellow rocket
Berberis thunbergii	japanese barberry
Berteroa incana	hoary alyssum
Bolboschoenus maritimus	bulrush
Brassica nigra	black mustard
Celastrus orbiculatus	oriental bittersweet
Centaurea stoebe	spotted knapweed
Chenopodium album	lambs-quarters
Cirsium arvense	canada thistle
Cirsium vulgare	bull thistle
Convallaria majalis	lily-of-the-valley
Convolvulus arvensis	field bindweed
Cynodon dactylon	bermuda grass
Cyperus esculentus	yellow nutsedge
Daucus carota	queen-annes-lace
Digitaria ischaemum	smooth crab grass
Digitaria sanguinalis	hairy crab grass
Dipsacus fullonum	wild teasel
Dipsacus laciniatus	cut-leaf teasel
Elaeagnus umbellata	autumn-olive
Elymus repens	quack grass
Fallopia convolvulus	false buckwheat
Fallopia japonica	japanese knotweed
Frangula alnus	glossy buckthorn
Hesperis matronalis	dames rocket
Ipomoea purpurea	common morning-glory
Ligustrum vulgare	common privet
Lonicera maackii	amur honeysuckle
Lonicera tatarica	tartarian honeysuckle
Lysimachia nummularia	moneywort
Lythrum salicaria	purple loosestrife
Melilotus albus	white sweet-clover
Melilotus officinalis	yellow sweet-clover
Morus alba	white mulberry
Pastinaca sativa	wild parsnip
Phragmites australis	reed

Scientific Name	Common Name
Rhamnus cathartica	common buckthorn
Robinia pseudoacacia	black locust
Rosa multiflora	multiflora rose
Rumex crispus	curly dock
Scilla luciliae	glory-of-the-snow
Sinapis arvensis	wild mustard
Sonchus arvensis	perennial sow-thistle
Sorghum halepense	johnson grass
Stellaria media	common chickweed
Tanacetum vulgare	garden tansy
Taraxacum officinale	common dandelion
Vincetoxicum nigrum	black swallow-wort

- I. Mulching: Re-mulch at the beginning of each growing season according to Section 02930. At the end of the guarantee, all mulch shall be at required depths and widths around trees.
- J. Treat as required to prevent and control insects, pests and diseases.
- K. Pest Control: Apply sprays and treatments as necessary for scale insects, leaf eating insects and blight control. Apply according to manufacturer's current printed instructions and in accordance with local ordinances.
- L. Control geese and other wildlife by restricting access to the plants and seeded areas or removing them from the planting areas.
- M. Predation from animals shall not relieve CONTRACTOR from replacing the plant material. CONTRACTOR shall replant at the proper season and provide protection to the plant material from wildlife damage as necessary.
- N. Pruning: Prune, thin, and shape trees only as directed by the ENGINEER/OWNER.

3.03 MAINTENANCE PERIOD PERFORMANCE

- A. All landscaping that does not comply with performance criteria to be replaced.
- B. Execution and timing of replacement plantings shall comply with Section 02930.
- C. Trees
 - 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all trees not in a thriving condition.

2. Trees considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

D. Shrubs

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all shrubs not in a thriving condition.
- 2. Shrubs considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Shrubs exhibiting only basal sprouts will not be accepted.

E. Live Stakes

- Replace, without cost to OWNER, and as soon as weather conditions permit, all live stakes with poor survivability at the end of each growing season and at the end of the maintenance period.
- 2. Successful planted areas must exhibit 60% survivability.

F. Plugs

- 1. Replant, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER all dead plugs if survivability is lower than the following:
 - a. There is less than 90% survivability at the end of the first growing season, or
 - b. There is less than 80% survivability at the end of the second growing season.

G. Native Seed

- Reseed, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, areas with poor vegetative cover anytime within the maintenance period growing seasons. Poor vegetative cover shall defined as follows:
 - a. There is less than 90% coverage (including cover crop). Re-seed or over-seed the entire seeding area where coverage is less than 90% until 90% coverage is achieved.
 - b. There are bare spots greater than four (4) square feet in area. Re-seed and remulch bare spots.
 - c. There is less than 10% of the native species observed to be established at the end of the first growing season. Re-seed or over-seed are where measure is not met.

- d. There is less than 75% of the native species observed to be established at the end of the second growing season. Re-seed or over-seed are where measure is not met.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.

H. Turf Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all bare areas and areas with poor vegetative cover or:
 - a. There is less than 90% coverage.
 - b. There are bare spots greater than four (4) square feet in area.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.
- 3. No more than 10% percent relative ground coverage is permitted by any of the listed undesirable species at the end of each growing season and at the end of the maintenance period.
- I. Exemptions: CONTRACTOR shall not be responsible for plant material that has been damaged by acts of vandalism or fire or severe wind or hail after the Planting Installation Acceptance.
- J. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.

3.04 SITE CLEAN UP

A. Site clean up in accordance with Section 02930.

3.05 PROTECTION OF FINISHED WORK

A. Protection of finished work in accordance with Section 02930.

3.06 FIELD QUALITY CONTROL

A. Maintenance Monitoring

- 1. CONTRACTOR is to perform monitoring once per month during the growing season, at a minimum, to monitor the condition of the vegetation and its performance relative to performance criteria. This can be conducted during the maintenance visits.
- 1. A comprehensive report shall be submitted to the OWNER within 10 working days following each of the maintenance visits during the growing season. The report shall

document all actions conducted by the Contractor during the maintenance visit. The report shall include:

- a. Map detailing location of maintenance performed. Please note areas within the planting zones of special concern (e.g. dense patch of non-native/invasive species).
- b. Summary of inspection field notes, inspection forms, maintenance logs, and herbicide/pesticide application and EGLE Aquatic Treatment Forms. Documentation of summarized material shall be included in an appendix.
- c. Summary of weed and pest control measures and schedule of operations.
- d. Summary of maintenance correspondence.
- e. Detailed discussion of work completed during maintenance visits, including any replacements.
- f. Detailed discussion of work required for the next maintenance inspection visits.
- g. Quantify the percentage of vegetation planted by CONTRACTOR that is healthy and meets Contract Document requirements for closeout of the maintenance period.
- h. Quantify the percentage of non-native/invasive species at areas vegetated by the CONTRACTOR. Estimate during each inspection and quantify by OWNER approved method for maintenance period closeout.
- i. Provide rainfall and irrigation data during the period of maintenance.
- j. Provide representative photographs at fixed photo points of areas vegetated by the CONTRACTOR.
- 2. Verification: Verification of visits may be required by the OWNER in the form of labor reports and/or certified payroll covering the visits.

3.07 LANDSCAPE MAINTENANCE ACCEPTANCE

- A. Landscape Maintenance Acceptance Inspections and Acceptance Issuance:
 - 1. At the end of the maintenance period, the CONTRACTOR shall request a review by the ENGINEER to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 2. If it is found that all landscape and maintenance work does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the ENGINEER of all corrective work preventing acceptance of the landscape and maintenance work within five working days of the Review. No partial approvals shall be given.
 - 3. Upon completion of the corrective work, the CONTRACTOR shall request another Review to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 4. Corrective work followed by review will be required until the corrective work is found to be complete by the ENGINEER.

- 5. The CONTRACTOR shall reimburse ENGINEER for expenses and fees required to have ENGINEER make additional field trips after the first inspection.
- 6. When the ENGINEER determines that the landscape and maintenance work conforms to the requirements of the Contract Documents at the end of the maintenance period the CONTRACTOR will receive a written notification of Landscape Maintenance Acceptance.
- 7. Issuance of the Landscape Maintenance Acceptance notification will terminate the maintenance period and initiate the Warranty Period, Section 02932.
- 8. Continue maintenance of all landscape work until the date that the OWNER accepts maintenance at the end of the Maintenance Period.
- 9. The OWNER will accept maintenance responsibility upon the date specified in the notification of Final Landscape Maintenance Acceptance.

END OF SECTION

SECTION 02932

LANDSCAPE WARRANTY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for satisfactory landscape warranties associated with installed landscaping following landscape maintenance acceptance.

1.02 RELATED WORK

- 1. Section 01025 Measurement and Payment
- 2. Section 01040 Coordination
- 3. Section 01700 Contract Closeout
- 4. Section 02930 Landscaping
- 5. Section 02931 Landscape Maintenance

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- B. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material as defined in Section 02930.
- C. Landscape Maintenance Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance of the installed plantings has been satisfied and for the duration of the required maintenance period as defined in Section 02931.
- D. Final Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance and performance of the installed plantings has been satisfied and for the duration of the warranty period.

1.05 SUBMITTALS

- A. General: Meet requirements of Section 01300
- B. Requirements of Section 02930 apply to any replacement plantings installed during the warranty period.

1.06 QUALITY ASSURANCE

- A. Contractor Qualifications:
 - 1. Refer to Sections 02930 and 02931.
- B. Regulatory Requirements:
 - 1. Refer to Sections 02930 and 02931.
- 1.07 PRODUCT DELIVERY, STORAGE AND HANDLING
 - A. Refer to Sections 02930 and 02931.
- 1.08 SEQUENCING AND SCHEDULING
 - A. Installation per Section 02930.
 - B. Maintenance Period per Section 02931.
 - C. Warranty Period
 - 1. Begins with written Landscape Maintenance Acceptance.
 - 2. Continues through one full growing season following Landscape Maintenance Acceptance. (Growing season is May 1 through October 15.) or receipt of Final Acceptance.
 - 3. During the Warranty Period, the CONTRACTOR shall guarantee all landscaping and respond within 10 working days of written requests by the OWNER for replacement or repair. If the CONTRACTOR fails to respond within this time, the OWNER may proceed with replacement work and bill the CONTRACTOR.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All replacement material:
 - 1. Match existing. See Section 02930 and written approvals for substitutions.
 - 2. For plant stock, match existing genus, species, and size. See Section 02930 and written approvals for substitutions.
 - 3. Meet requirements of these specifications and Sections 02930 and 02931.
- B. Herbicides, Insecticides, and Fungicides:

1. Refer to Section 02930 and 02931.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

A. Warranty Period

- 1. Begins with written Landscape Maintenance Acceptance as defined in Section 02930.
- 2. Continues through one full growing season following Landscape Maintenance Acceptance. (Growing season is May 1 through October 15.) or receipt of Final Acceptance.
- 3. During the Warranty Period, the CONTRACTOR shall guarantee all landscaping and respond within 10 working days of written requests by the OWNER for replacement or repair. If the CONTRACTOR fails to respond within this time, the OWNER may proceed with replacement work and bill the CONTRACTOR.
- B. Protection of Existing Conditions: Refer to Section 02931.

3.02 WARRANTY PERIOD PERFORMANCE

- A. All landscaping that does not comply with performance criteria to be replaced.
- B. Execution and timing of replacement plantings shall comply with Section 02930.

C. Trees

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all trees not in a thriving condition.
- 2. Trees considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

D. Shrubs

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all shrubs not in a thriving condition.
- 2. Shrubs considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Shrubs exhibiting only basal sprouts will not be accepted.
- E. Live Stakes

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit, all live stakes with poor survivability at the end of the warranty period.
- 2. Successful planted areas must exhibit 60% survivability.

F. Plugs

1. Replant, without cost to OWNER, and as soon as weather conditions at the end of the warranty period, or as permitted in writing by the ENGINEER all dead plugs if survivability is lower than 80% survivability at the end of the warranty period.

G. Native Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all bare areas and areas with poor vegetative cover or:
 - i. There is less than 90% coverage (including cover crop)
 - ii. There are bare spots greater than four (4) square feet in area.
 - iii. There is less than 50% of the native species observed to be established at the end of the second growing season.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.

H. Turf Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all bare areas and areas with poor vegetative cover or:
 - i. There is less than 90% coverage (including cover crop)
 - ii. There are bare spots greater than four (4) square feet in area.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.
- I. Exemptions: CONTRACTOR shall not be responsible for plant material that has been damaged by acts of vandalism or fire after the Planting Installation Acceptance.
- J. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.

3.03 SITE CLEAN UP

A. Site clean up in accordance with Section 02930.

3.04 PROTECTION OF FINISHED WORK

A. Protection of finished work in accordance with Section 02930.

3.05 FINAL ACCEPTANCE

- A. Final Acceptance after Warranty Period
 - 1. At the end of the warranty period, the CONTRACTOR shall request a review by the ENGINEER to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 2. If it is found that all landscaping does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the ENGINEER of all corrective work preventing acceptance of the landscaping within five working days of the Review. No partial approvals shall be given.
 - 3. Upon completion of the corrective work, the CONTRACTOR shall request another Review to determine whether all landscaping conforms to the requirements of the Contract Documents.
 - 4. Corrective work followed by review will be required until the corrective work is found to be complete by the ENGINEER.
 - 5. The CONTRACTOR shall reimburse ENGINEER for expenses and fee required to have ENGINEER make additional field trips after the first inspection.
 - 6. When the ENGINEER determines that the landscaping conforms to the requirements of the Contract Documents at the end of the Warranty Period the CONTRACTOR will receive a written notification of Final Acceptance.
 - 7. Issuance of the Final Acceptance notification will terminate the warranty period.

END OF SECTION

SECTION 02940

SITE RESTORATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and maintenance necessary to provide finished site restoration.

1.02 REFERENCES

A. Related Work

- 1. Section 02220 Soil Erosion and Sedimentation Control
- 2. Section 02300 Earthwork
- 3. Section 02930 Landscaping

1.03 SUBMITTALS

A. Procedures for any restoration work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. All materials for restoration shall be in accordance with respective specification section included here within.

PART 3 – EXECUTION

3.01. GENERAL

- A. Execution for restoration shall be in accordance with respective specification section included here within.
- B. All paved areas shall swept free of soil, stains and debris.
- C. All disturbed vegetation, pavement, curb and gutter, structure, or any other pre-existing condition shall be restored to original condition at expense of the Contractor.
- D. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed.
- E. Mark restored areas to prevent intrusion by foot traffic and/or equipment as necessary.

F. Immediately restore areas disturbed by continuing operations.

END OF SECTION

ROUGE RIVER AOC: JOHNSON CREEK - FISH HATCHERY PARK HABITAT RESTORATION PROJECT





WAYNE COUNTY, MICHIGAN GLRI EPA AWARD NO. GL-00E02344-0 (DESIGN) GLRI EPA AWARD NO. GL-00E02478-0 (CONSTRUCTION) FOR BIDDING - MARCH, 2020





Environmental Consulting & Technology, Inc. 2200 Commonwealth Boulevard, Suite 30 Ann Arbor, Michigan 48105 Phone: 734.769.3004

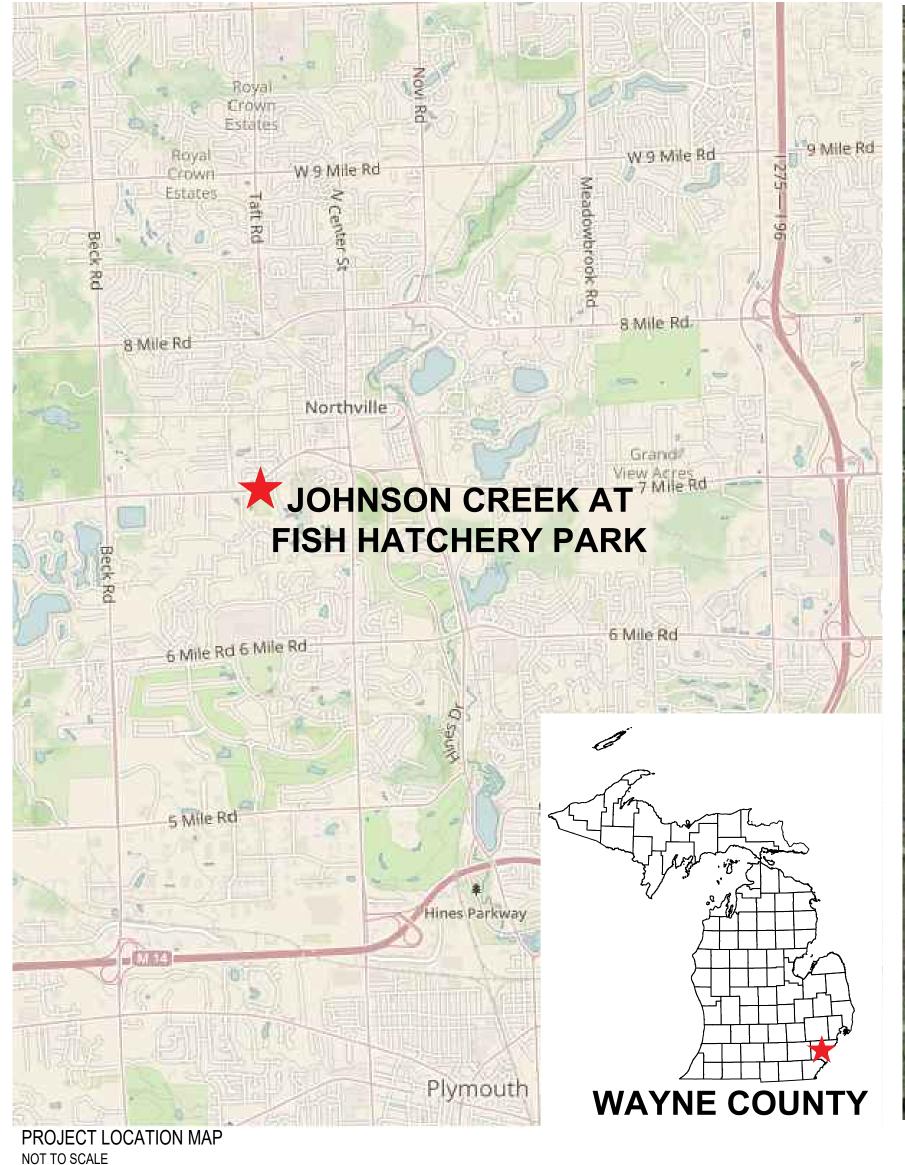
WITH:

Fax: 734.769.31664









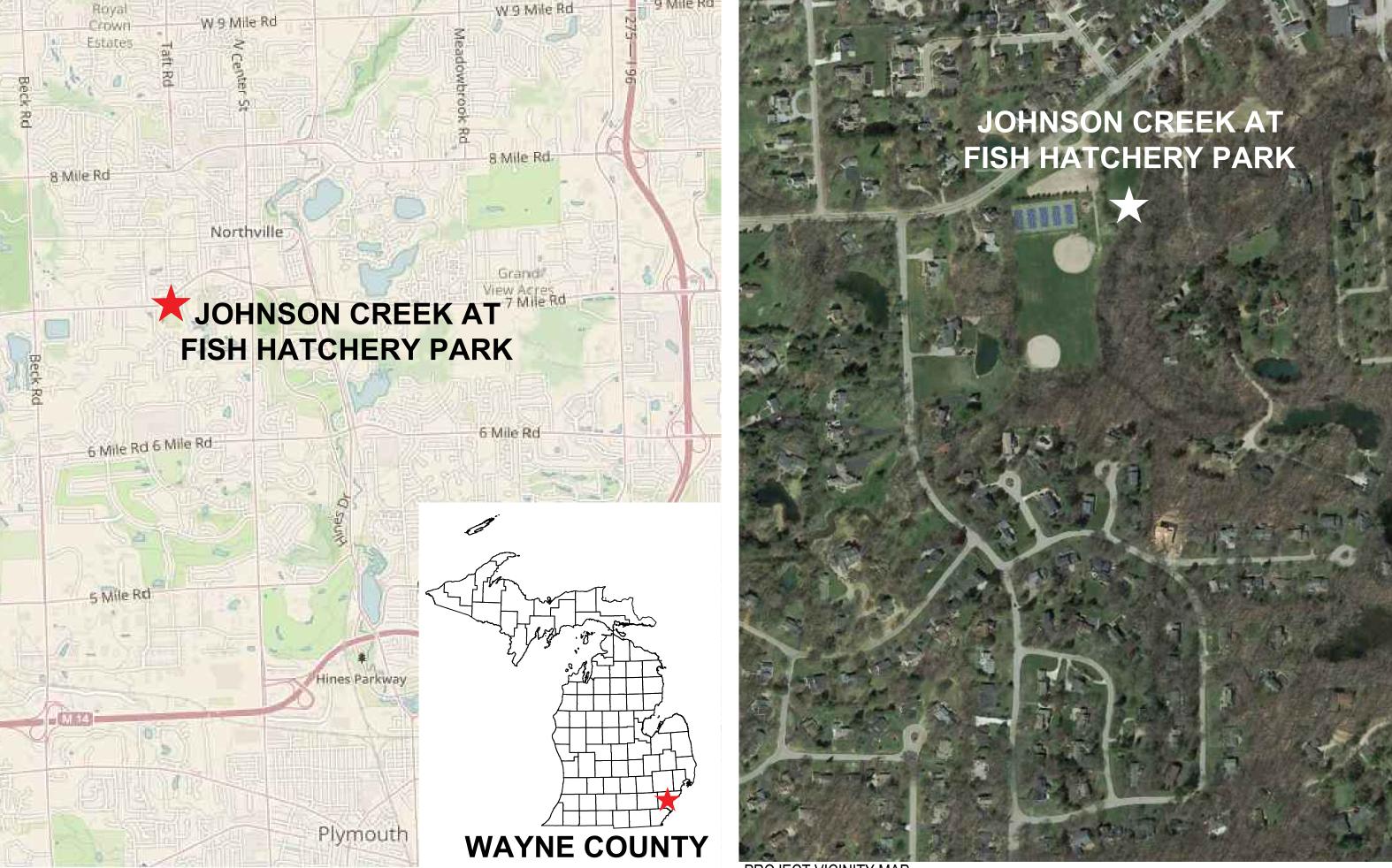


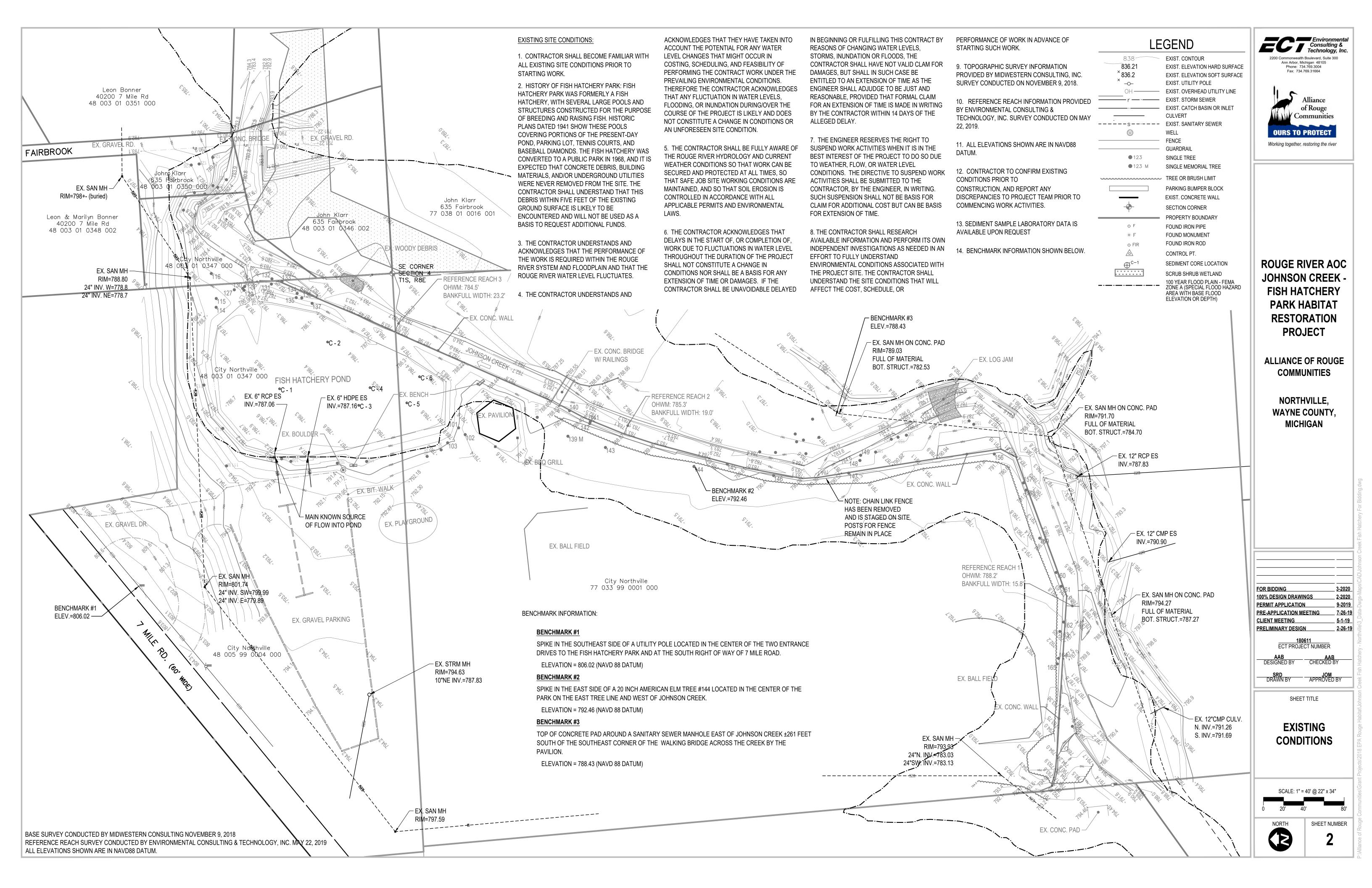
DRAWING INDEX

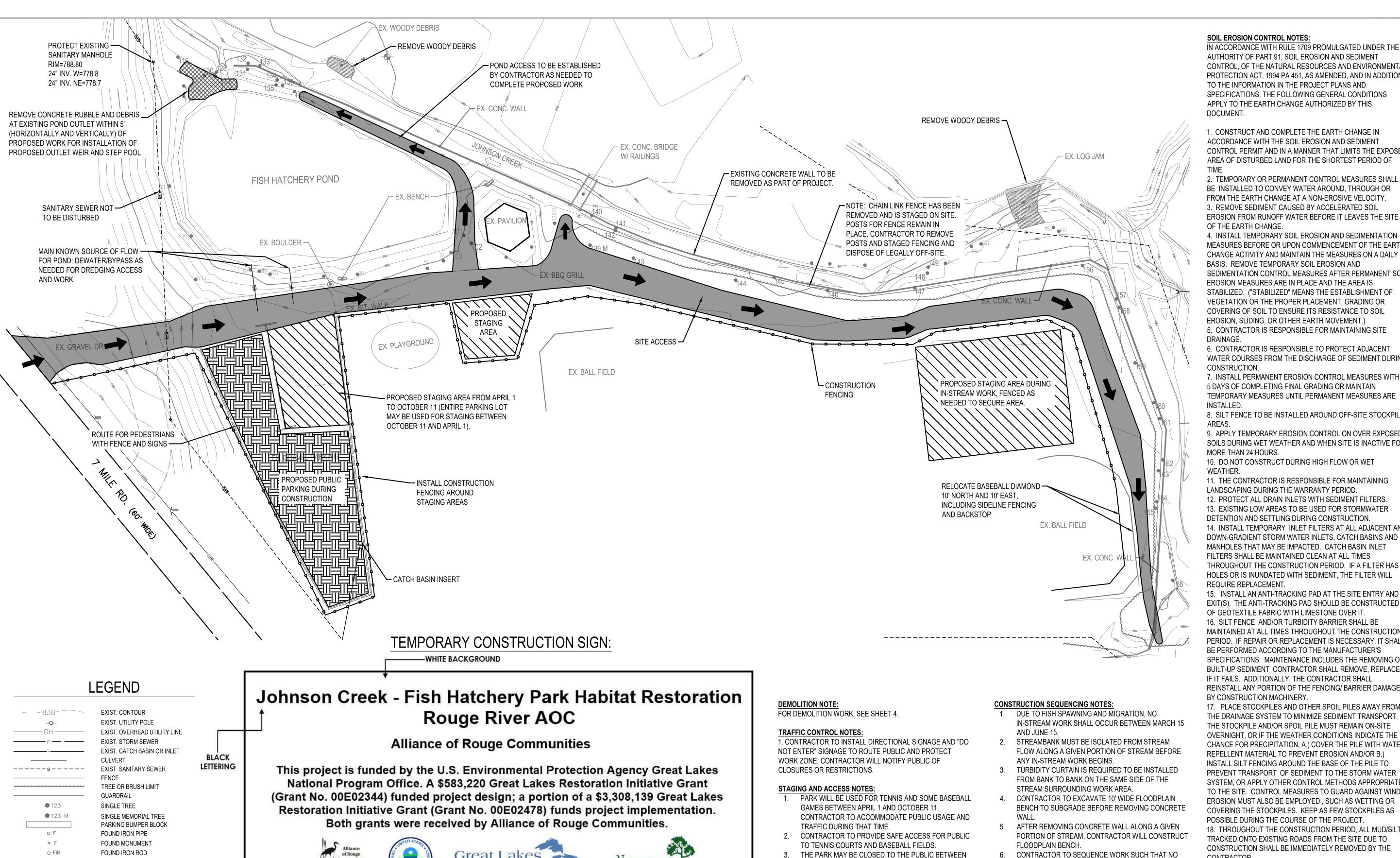
- **COVER SHEET**
- **EXISTING CONDITIONS**
- SITE PREPARATION
- **DEMOLITION PLAN**
- DREDGE STAGING AND DEWATERING DETAILS
- PROPOSED PLAN OVERVIEW
- **PROPOSED PLAN JOHNSON CREEK**
- PROPOSED CROSS SECTIONS JOHNSON CREEK
- PROPOSED PLAN POINT BAR GRADING
- PROPOSED PLAN POND
- PROPOSED CROSS SECTIONS POND
- PROPOSED DETAILS POND OUTLET
- PROPOSED PROFILE POND OUTLET
- JOHNSON CREEK PEDESTRIAN BRIDGE
- SHEET PILE WALL DETAILS
- **DETAILS SHEET PILE WALL**
- **SEDIMENT CAPTURE AREA**
- **REVEGETATION PLAN OVERVIEW**
- **REVEGETATION PLAN JOHNSON CREEK**
- **REVEGETATION PLAN POND**
- **DETAILS REVEGETATION**

SUPPLEMENTAL INFORMATION

- "FIGURE 2 SITE PLAN", OHM SEDIMENT THICKNESS DATA, 2015, FOR INFORMATIONAL PURPOSES ONLY
- "AS-BUILTS", SME, 2019, FOR INFORMATIONAL **PURPOSES ONLY**
- "NORTHVILLE STATION, MICHIGAN, 1941", HISTORIC PLAN VIEW SKETCH OF FISH HATCHERY PARK







- THE PARK MAY BE CLOSED TO THE PUBLIC BETWEEN OCTOBER 11 AND APRIL 1 AND THE ENTIRE PARKING LOT MAY BE USED FOR STAGING.
- CONTRACTOR TO PROVIDE TRAFFIC SIGNAGE FOR CLOSURES AND PEDESTRIAN/ PUBLIC USE.
- MORE THAN 100 LF OF INCOMPLETE FLOODPLAIN BENCH IS EXPOSED AT ANY TIME. CONTRACTOR TO FINISH STABILIZATION OF FLOODPLAIN BENCH SECTION, INCLUDING SEEDING AND EROSION CONTROL BLANKET INSTALLATION, BEFORE MOVING ON TO NEXT SECTION.

SOIL EROSION CONTROL NOTES:

IN ACCORDANCE WITH RULE 1709 PROMULGATED UNDER THE AUTHORITY OF PART 91, SOIL EROSION AND SEDIMENT CONTROL, OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED, AND IN ADDITION TO THE INFORMATION IN THE PROJECT PLANS AND SPECIFICATIONS, THE FOLLOWING GENERAL CONDITIONS APPLY TO THE EARTH CHANGE AUTHORIZED BY THIS DOCUMENT.

1. CONSTRUCT AND COMPLETE THE EARTH CHANGE IN ACCORDANCE WITH THE SOIL EROSION AND SEDIMENT CONTROL PERMIT AND IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF

2. TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE INSTALLED TO CONVEY WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AT A NON-EROSIVE VELOCITY. 3. REMOVE SEDIMENT CAUSED BY ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE.

MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN THE MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT.) 5. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SITE

6. CONTRACTOR IS RESPONSIBLE TO PROTECT ADJACENT WATER COURSES FROM THE DISCHARGE OF SEDIMENT DURING CONSTRUCTION.

7. INSTALL PERMANENT EROSION CONTROL MEASURES WITHIN 5 DAYS OF COMPLETING FINAL GRADING OR MAINTAIN TEMPORARY MEASURES UNTIL PERMANENT MEASURES ARE INSTALLED.

8. SILT FENCE TO BE INSTALLED AROUND OFF-SITE STOCKPILE

9. APPLY TEMPORARY EROSION CONTROL ON OVER EXPOSED SOILS DURING WET WEATHER AND WHEN SITE IS INACTIVE FOR MORE THAN 24 HOURS.

10. DO NOT CONSTRUCT DURING HIGH FLOW OR WET

11. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING LANDSCAPING DURING THE WARRANTY PERIOD. 12. PROTECT ALL DRAIN INLETS WITH SEDIMENT FILTERS. 13. EXISTING LOW AREAS TO BE USED FOR STORMWATER DETENTION AND SETTLING DURING CONSTRUCTION. 14. INSTALL TEMPORARY INLET FILTERS AT ALL ADJACENT AND DOWN-GRADIENT STORM WATER INLETS, CATCH BASINS AND MANHOLES THAT MAY BE IMPACTED. CATCH BASIN INLET FILTERS SHALL BE MAINTAINED CLEAN AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF A FILTER HAS HOLES OR IS INUNDATED WITH SEDIMENT, THE FILTER WILL REQUIRE REPLACEMENT

15. INSTALL AN ANTI-TRACKING PAD AT THE SITE ENTRY AND EXIT(S). THE ANTI-TRACKING PAD SHOULD BE CONSTRUCTED OF GEOTEXTILE FABRIC WITH LIMESTONE OVER IT. 16. SILT FENCE AND/OR TURBIDITY BARRIER SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF REPAIR OR REPLACEMENT IS NECESSARY, IT SHALL BE PERFORMED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. MAINTENANCE INCLUDES THE REMOVING OF BUILT-UP SEDIMENT CONTRACTOR SHALL REMOVE, REPLACE IF IT FAILS. ADDITIONALLY, THE CONTRACTOR SHALL

REINSTALL ANY PORTION OF THE FENCING/ BARRIER DAMAGED BY CONSTRUCTION MACHINERY 17. PLACE STOCKPILES AND OTHER SPOIL PILES AWAY FROM THE DRAINAGE SYSTEM TO MINIMIZE SEDIMENT TRANSPORT. IF THE STOCKPILE AND/OR SPOIL PILE MUST REMAIN ON-SITE

OVERNIGHT, OR IF THE WEATHER CONDITIONS INDICATE THE CHANCE FOR PRECIPITATION, A.) COVER THE PILE WITH WATER REPELLENT MATERIAL TO PREVENT EROSION AND/OR B.) INSTALL SILT FENCING AROUND THE BASE OF THE PILE TO PREVENT TRANSPORT OF SEDIMENT TO THE STORM WATER SYSTEM, OR APPLY OTHER CONTROL METHODS APPROPRIATE TO THE SITE. CONTROL MEASURES TO GUARD AGAINST WIND EROSION MUST ALSO BE EMPLOYED, SUCH AS WETTING OR COVERING THE STOCKPILES. KEEP AS FEW STOCKPILES AS POSSIBLE DURING THE COURSE OF THE PROJECT. 18. THROUGHOUT THE CONSTRUCTION PERIOD, ALL MUD/SILT

TRACKED ONTO EXISTING ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR. 19. SEEDING OR OTHER STABILIZATION SHALL BE REQUIRED

IMMEDIATELY TO AREAS WHICH HAVE BEEN DAMAGED BY RUNOFF

20. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL ON THE SITE THROUGHOUT THE DURATION OF THE CONSTRUCTION PROCESS.

00 Commonwealth Boulevard, Suite 300 Ann Arbor, Michigan 48105 Phone: 734.769.3004 Fax: 734.769.31664 of Rouge Communities

OURS TO PROTECT

Working together, restoring the river

ROUGE RIVER AOC **JOHNSON CREEK FISH HATCHERY PARK HABITAT RESTORATION PROJECT**

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE. WAYNE COUNTY, MICHIGAN

FOR BIDDING 100% DESIGN DRAWINGS 2-2020 PERMIT APPLICATION <u>9-2019</u> PRE-APPLICATION MEETING <u>7-26-19</u> CLIENT MEETING <u>5-1-19</u> PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER

SHEET TITLE

SITE **PREPARATION**

SCALE: 1" = 20' @ 22" x 34"

SHEET NUMBER

SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x 3/4") PLYWOOD PANEL (APA RATED A-B GRADE-EXTERIOR)

Contractor: (Insert Logo Here)

RESTORATION

100 YEAR FLOOD PLAIN - FEMA ZONE

(SPECIAL FLOOD HAZARD AREA WITH

BASE FLOOD ELEVATION OR DEPTH)

PROPOSED PUBLIC ACCESS/PARKING

PROPOSED CONCRETE RUBBLE REMOVAL

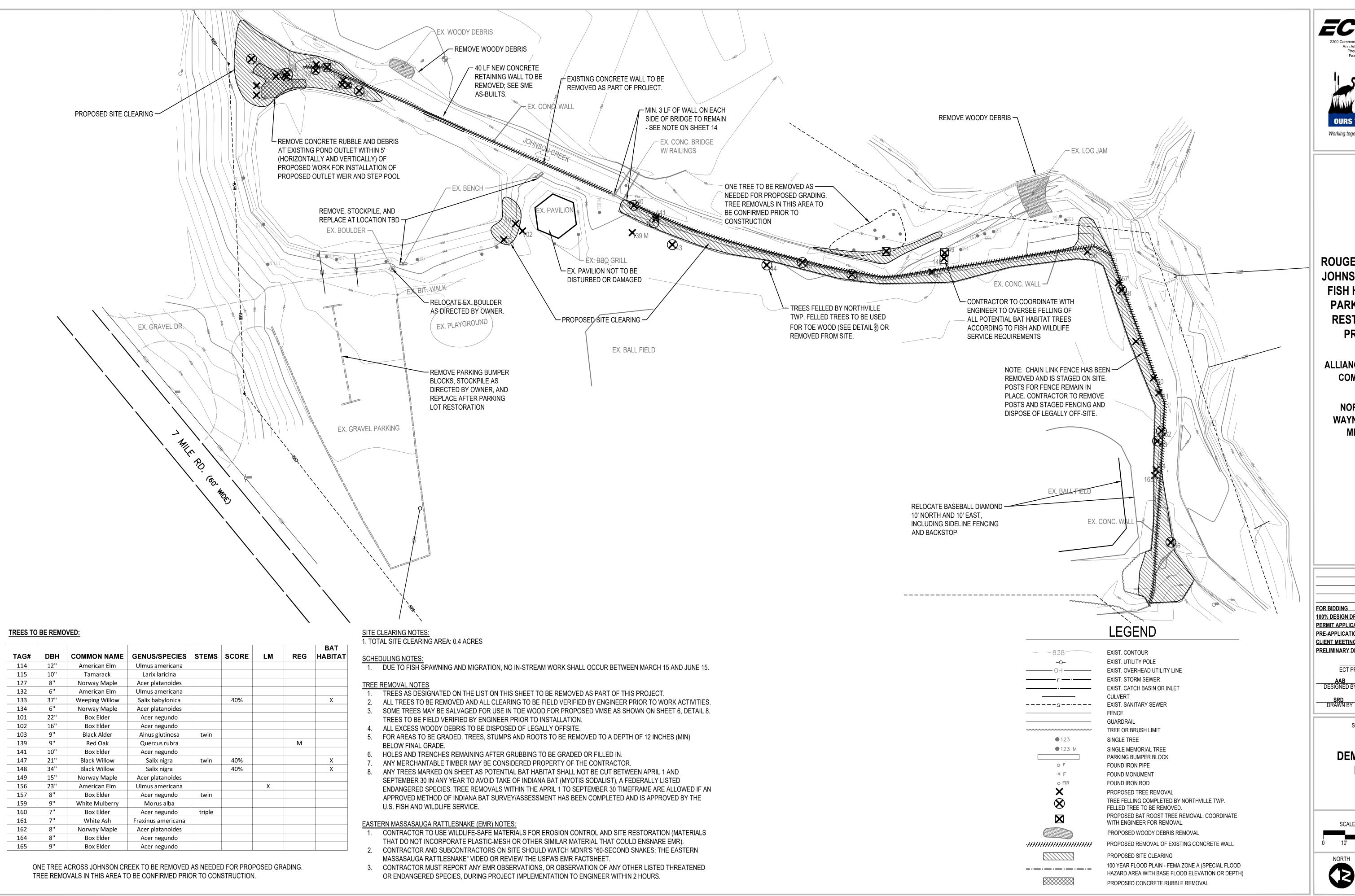
PROPOSED STAGING AREA

PROPOSED ACCESS ROUTE

CONSTRUCTION FENCING

1

-0---0---0---



200 Commonwealth Boulevard, Suite 300 Ann Arbor, Michigan 48105 Phone: 734.769.3004 Fax: 734.769.31664



ROUGE RIVER AOC JOHNSON CREEK **FISH HATCHERY PARK HABITAT RESTORATION PROJECT**

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE. WAYNE COUNTY, **MICHIGAN**

100% DESIGN DRAWINGS PERMIT APPLICATION PRE-APPLICATION MEETING CLIENT MEETING <u>5-1-19</u> PRELIMINARY DESIGN ECT PROJECT NUMBER

DRAWN BY APPROVED BY

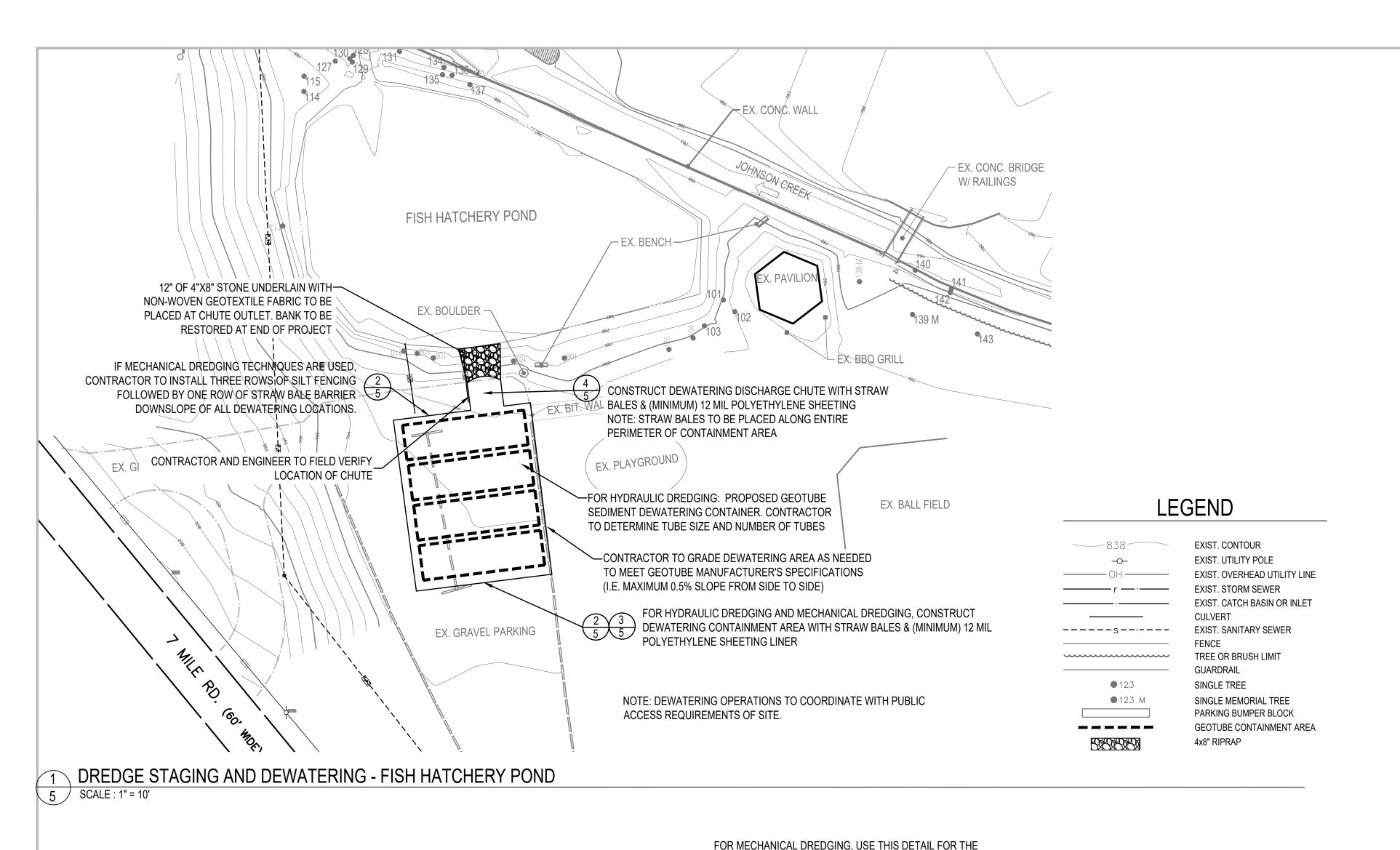
SHEET TITLE

DEMOLITION PLAN

SCALE: 1" = 20' @ 22" x 34"



SHEET NUMBER



GENERAL DREDGING NOTES

- 1. CONTRACTOR TO VERIFY EXISTING CONDITIONS, INCLUDING BATHYMETRY, PRIOR TO START OF WORK BY CONDUCTING A PRE-DREDGING SURVEY AS DESCRIBED IN THE SPECIFICATIONS.
- 2. IF CONTRACTOR'S BATHYMETRIC DATA DIFFERS FROM THE CONTRACT PLANS, CONTACT ENGINEER FOR RESOLUTION PRIOR TO
- 3. CONTRACTOR MAY CHOOSE TO REMOVE SEDIMENT FROM FISH HATCHERY POND BY EITHER MECHANICAL OR HYDRAULIC DREDGING TECHNIQUES OR BOTH.
- 4. CONTRACTOR TO SUBMIT A DREDGING PLAN AND PROJECT SCHEDULE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO START
- 5. EXISTING POND BOTTOM SEDIMENTS MAY BE SOFT AND TEMPORARY HAUL ROADS ALONG THE LAKE BOTTOM MAY BE NECESSARY TO FACILITATE CONSTRUCTION TRAFFIC DURING RESTORATION ACTIVITIES. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO ACCESSING THE DREDGE AREAS.
- REMOVE SEDIMENT FROM FISH HATCHERY POND TO PROPOSED ELEVATIONS AS SHOWN ON THE DRAWINGS.
- CONTRACTOR TO ESTABLISH AND MAINTAIN STAGING AREA AND DEWATERING CONTAINMENT AREA AS SHOWN ON THE DRAWINGS.
- 8. CONTRACTOR SHALL DEWATER, LOAD, AND TRANSPORT SEDIMENT AND DEBRIS REMOVED FROM THE POND. CONTRACTOR TO ENSURE THAT SOILS HAVE A MINIMUM SOLIDS CONTENT BY WEIGHT OF 30% AND NO FREE LIQUIDS AS DESCRIBED IN THE SPECIFICATIONS OR AS REQUIRED BY THE LANDFILL FACILITY.
- ALL DISCHARGE FROM DEWATERING ACTIVITIES SHALL BE FILTERED PRIOR TO INTRODUCTION INTO THE WATERWAY TO ELIMINATE POTENTIAL RELEASE OF SEDIMENTS.
- 10. ALL DREDGED MATERIAL TO BE DISPOSED OF AT A TYPE II LANDFILL.
- 11. THIS IS AN URBAN RIVER SYSTEM AND IT SHOULD BE ANTICIPATED THAT 'URBAN DEBRIS' MAY BE ENCOUNTERED.
- 12. CONTRACTOR IS RESPONSIBLE FOR STAKING AND DEMARCATING LIMITS OF EXCAVATION AND DREDGING. CONTRACTOR MAY UTILIZE WIRELESS INTEGRATED DREDGE POSITIONING TECHNOLOGY, SUCH AS 'CLAMVISION' OR SIMILAR TO CONTROL AND RECORD WORK PROGRESS. THIS INFORMATION WILL BE MADE AVAILABLE TO ENGINEER UPON REQUIST AND/OR FURNISH AS PART OF PAY REQUESTS AS DESCRIBED IN THE SPECIFICATIONS.
- 13. CONTRACTOR TO COMPLETE SOUNDINGS WHEN NEARING COMPLETION OF DREDGING WORK AND SUBMIT TO ENGINEER AS DESCRIBED IN THE SPECIFICATIONS.
- 14. CONTRACTOR TO COMPLETE POST-DREDGING SEDIMENT ELEVATION SURVEYS FOR THE PROPOSED AREA OF WORK WITHIN FISH HATCHERY POND. ENGINEER TO APPROVE POST-CONSTRUCTION SURVEY PRIOR TO CONTRACTOR DEMOBILIZING AND PROCEEDING WITH RESTORATION ACTIVITIES.
- 15. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE RETURN FLOW OF EFFLUENT WATER BACK TO FISH HATCHERY POND WITHIN THE EXISTING DEWATERING AREA.
- 16. CONTRACTOR TO ENSURE THAT RETURN WATER DOES NOT CAUSE EROSION AT ANY TIME.

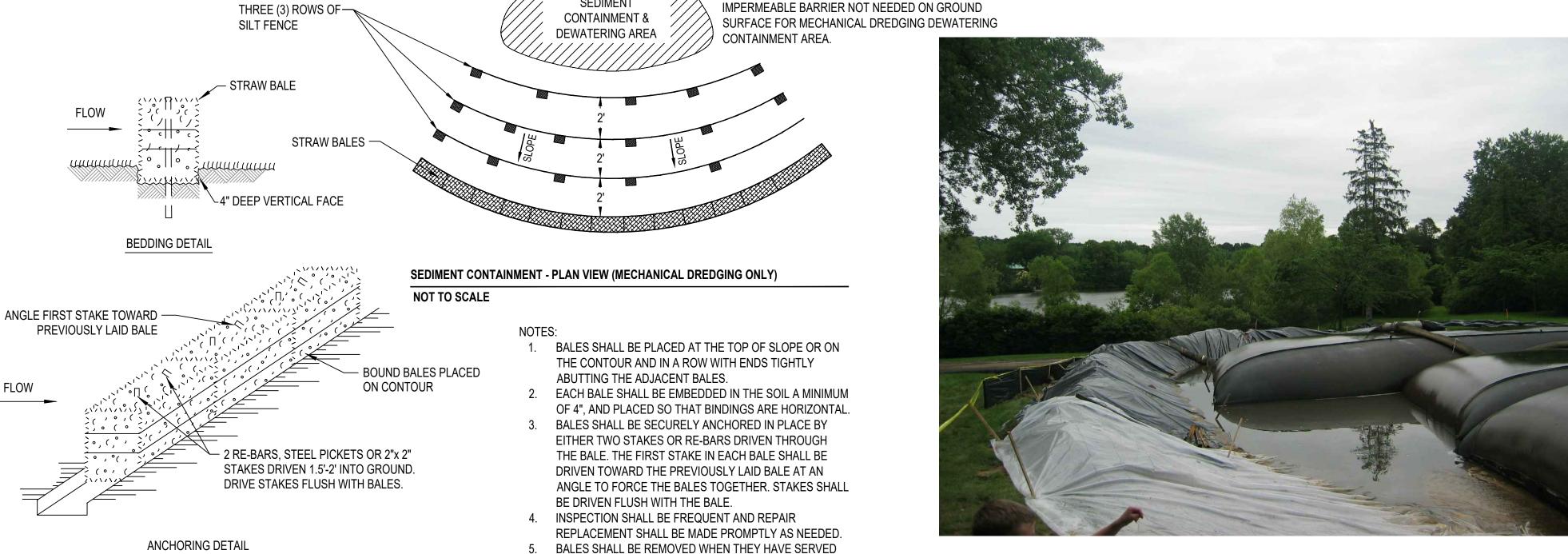
MECHANICAL DREDGING NOTES:

- IF MECHANICAL DREDGING TECHNIQUES ARE USED, THREE ROWS OF SILT FENCING FOLLOWED BY ONE ROW OF STRAW BALE FILTER
 MUST BE INSTALLED DOWNSLOPE OF ALL DEWATERING LOCATIONS. THE STRAW BALE FILTER SHOULD BE INSTALLED DOWNSLOPE
 OF THE SILT FENCE ROWS.
- 2. FOR MECHANICAL DREDGING, A DEWATER CONTAINMENT AREA SHALL BE CONSTRUCTED. STRAW BALES WITH IMPERMEABLE PLASTIC LINER TO BE USED AROUND PERIMETER TO CONTAIN SEDIMENTS AND WATER. IMPERMEABLE LAYER NOT TO BE USED ON GRADE.

HYDRAULIC DREDGING NOTES:

- 1. FOR HYDRAULIC DREDGING, GEOTUBES (OR APPROVED EQUAL) MUST BE USED TO SUFFICIENTLY DEWATER SEDIMENTS.
- 2. CONTRACTOR TO CONFIGURE STAGING AREA TO INCLUDE A GEOTUBE CONTAINMENT AREA WITH STRAW BALES INSTALLED AROUND ITS PERIMETER TO A HEIGHT AS SPECIFIED BY THE MANUFACTURER.
- 3. CONTRACTOR TO GRADE DEWATERING AREA AS NEEDED TO MEET GEOTUBE MANUFACTURER'S SPECIFICATIONS.
- 4. NO MORE THAN 0.5% GRADE FROM END TO END OF THE GEOTUBE CONTAINMENT AREA AND SHALL BE FREE OF ANY DEBRIS OR SHARP OBJECTS THAT MAY PUNCTURE THE PERMEABLE MEMBRANE OF THE GEOTUBE.
- SHARP OBJECTS THAT MAY PUNCTURE THE PERMEABLE MEMBRANE OF THE GEOTUBE.

 5. GEOTUBE CONTAINMENT AREA TO BE SLOPED TOWARD THE POND WITH SWALE DIRECTED TOWARD POND.
- 6. CONTRACTOR IS RESPONSIBLE FOR ORDERING THE APPROPRIATE NUMBER OF GEOTUBE DEWATERING CONTAINERS TO PROVIDE ADEQUATE REMOVAL OF SEDIMENTS VIA HYDRAULIC DREDGING.



THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE

STORM FLOW OR DRAINAGE.

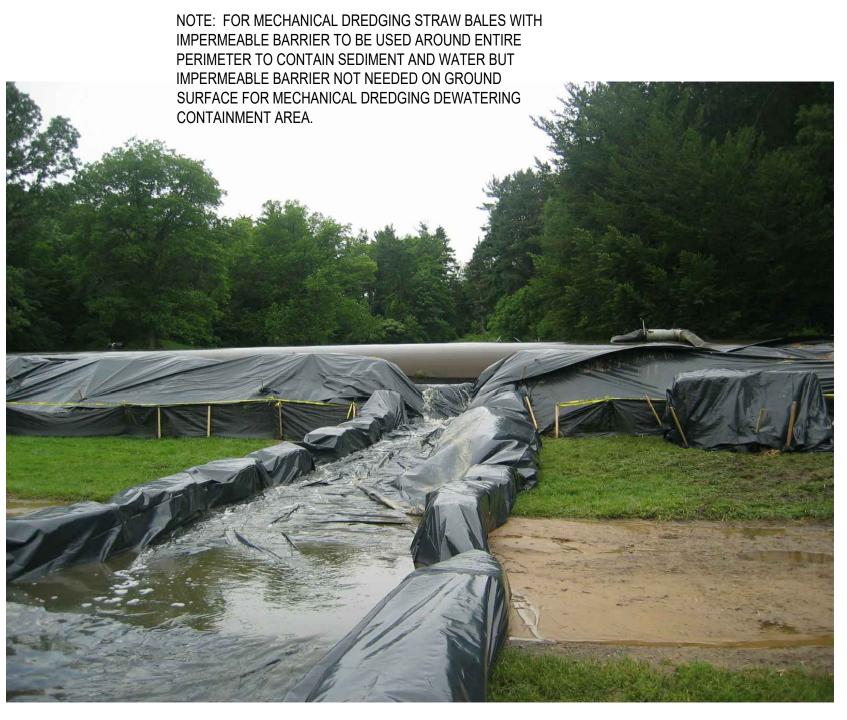
DOWN GRADIENT AREA. STRAW BALES WITH

PERIMETER TO CONTAIN SEDIMENT AND WATER.

IMPERMEABLE BARRIER TO BE USED AROUND ENTIRE

3 EXAMPLE GEOTUBE® CONTAINMENT AREA (HYDRAULIC DREDGING ONLY)

NOT TO SCALE



EXAMPLE GEOTUBE® DEWATERING CHUTE (HYDRAULIC DREDGING ONLY)

NOT TO SCALE

2200 Commonwealth Boulevard, Suite 300
Ann Arbor, Michigan 48105
Phone: 734.769.3004
Fax: 734.769.31664

Alliance
of Rouge
Communities

OURS TO PROTECT

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ROUGE RIVER AOC
JOHNSON CREEK FISH HATCHERY
PARK HABITAT
RESTORATION
PROJECT

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, MICHIGAN

FOR BIDDING

100% DESIGN DRAWINGS

PERMIT APPLICATION

PRE-APPLICATION MEETING

CLIENT MEETING

PRELIMINARY DESIGN

180611

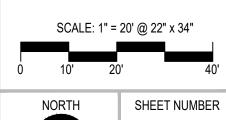
ECT PROJECT NUMBER

AAB

DESIGNED BY

CHECKED BY

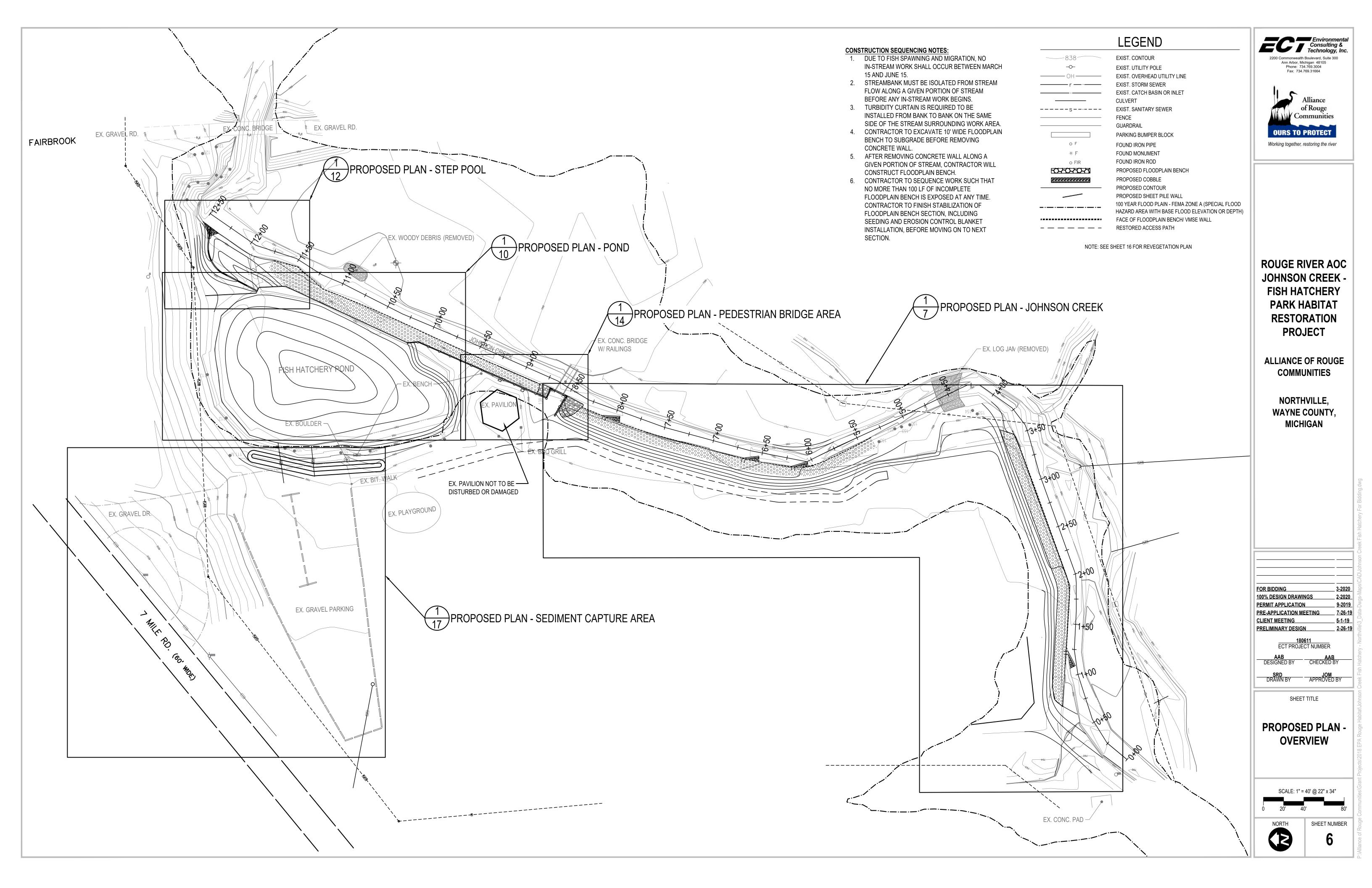
DREDGE
STAGING AND
DEWATERING
DETAILS

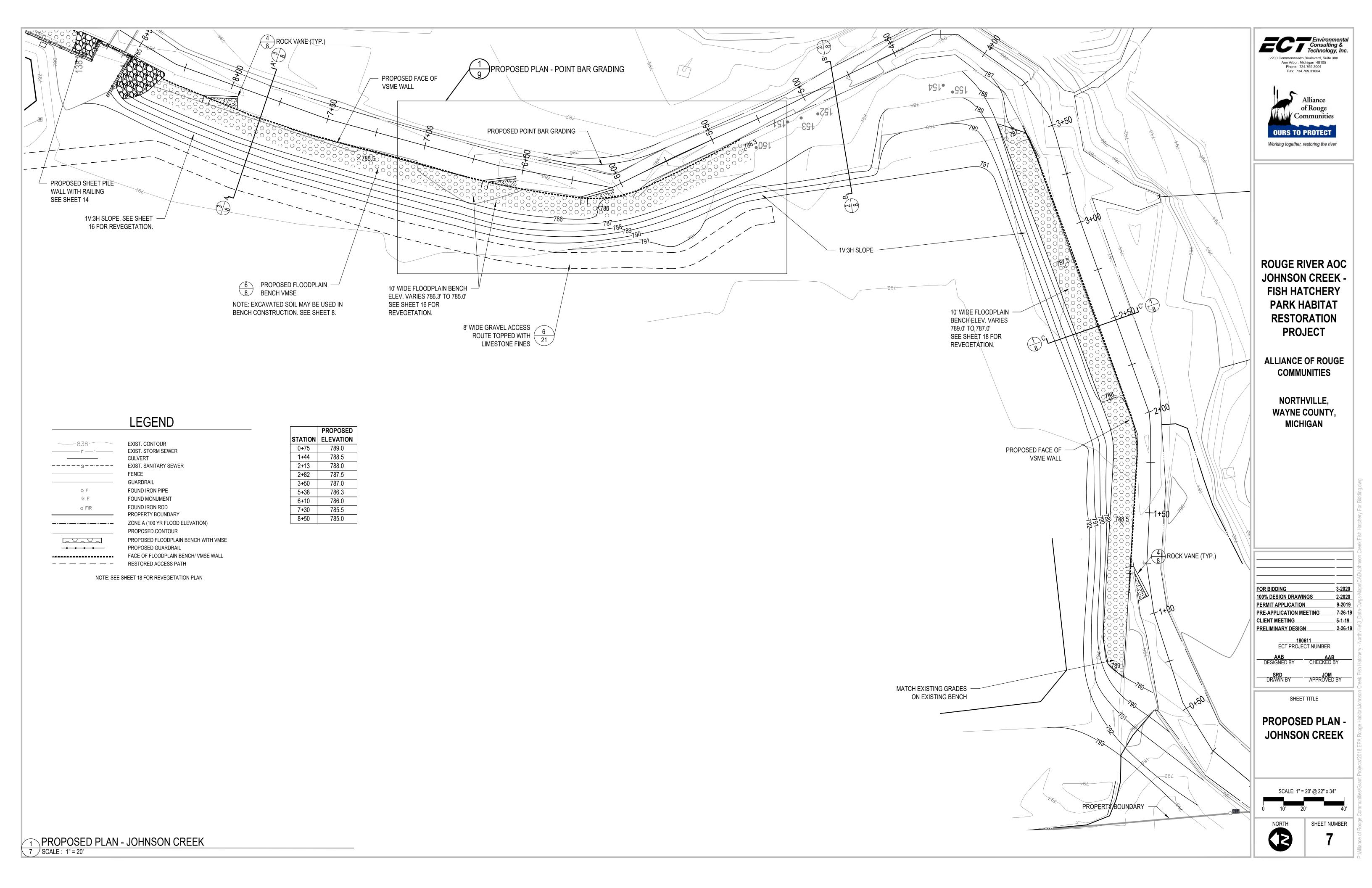


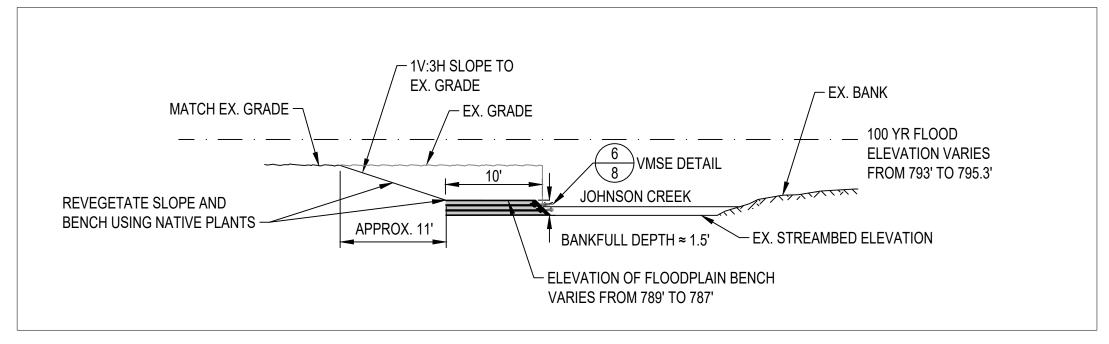
NORTH SH

5 NOT TO SCALE

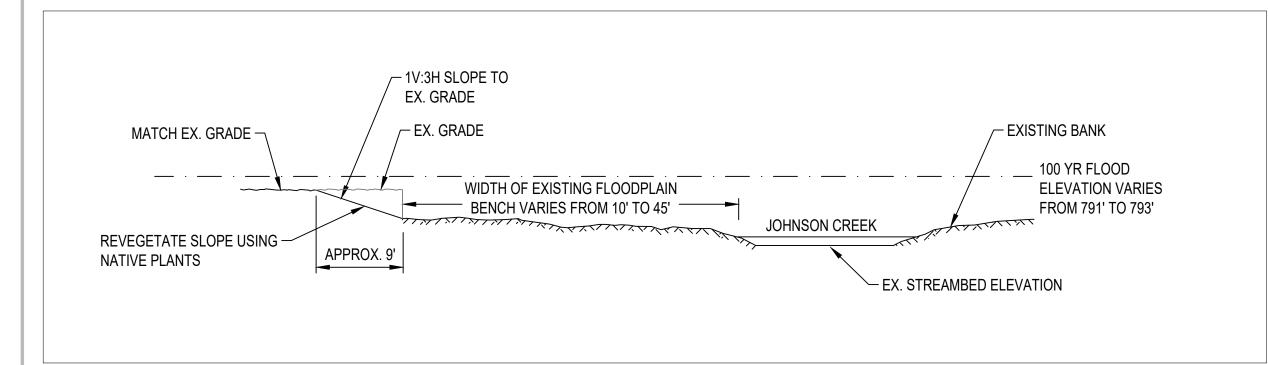
STRAW BALE BARRIER DETAIL



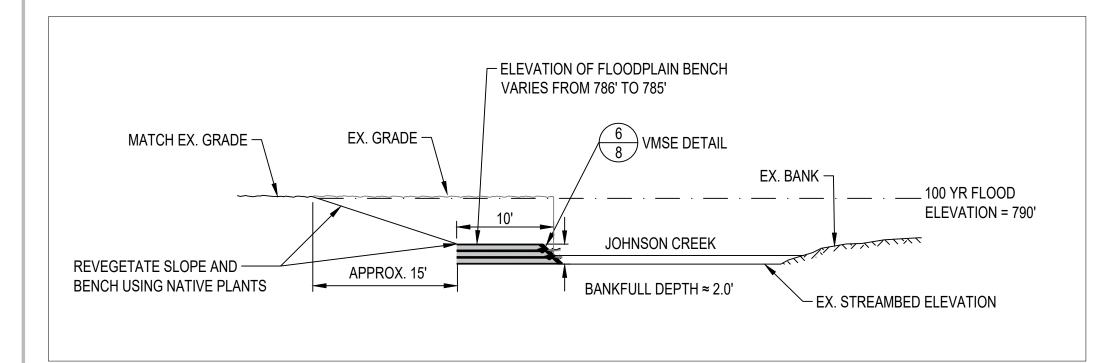




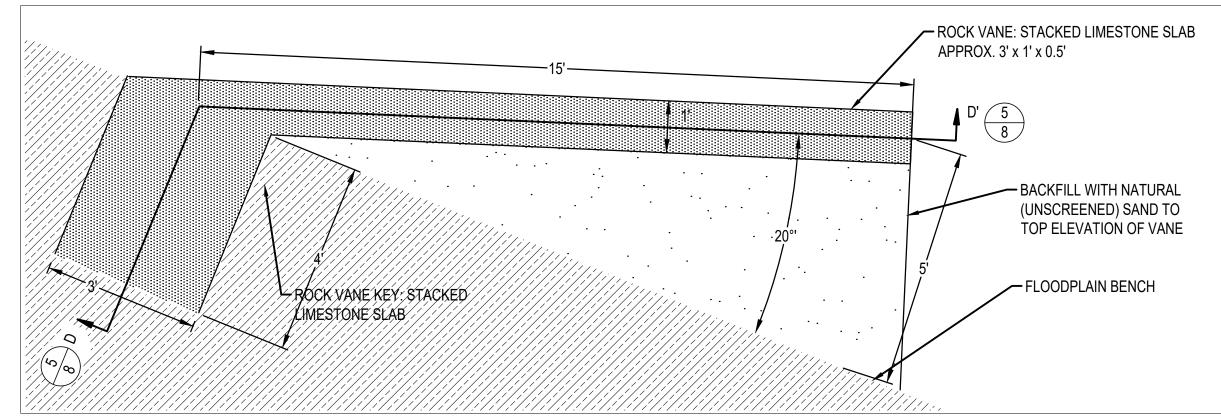
TYPICAL SECTION C-C' (STA 0+85 TO 3+53) 8 | SCALE : 1" = 10'



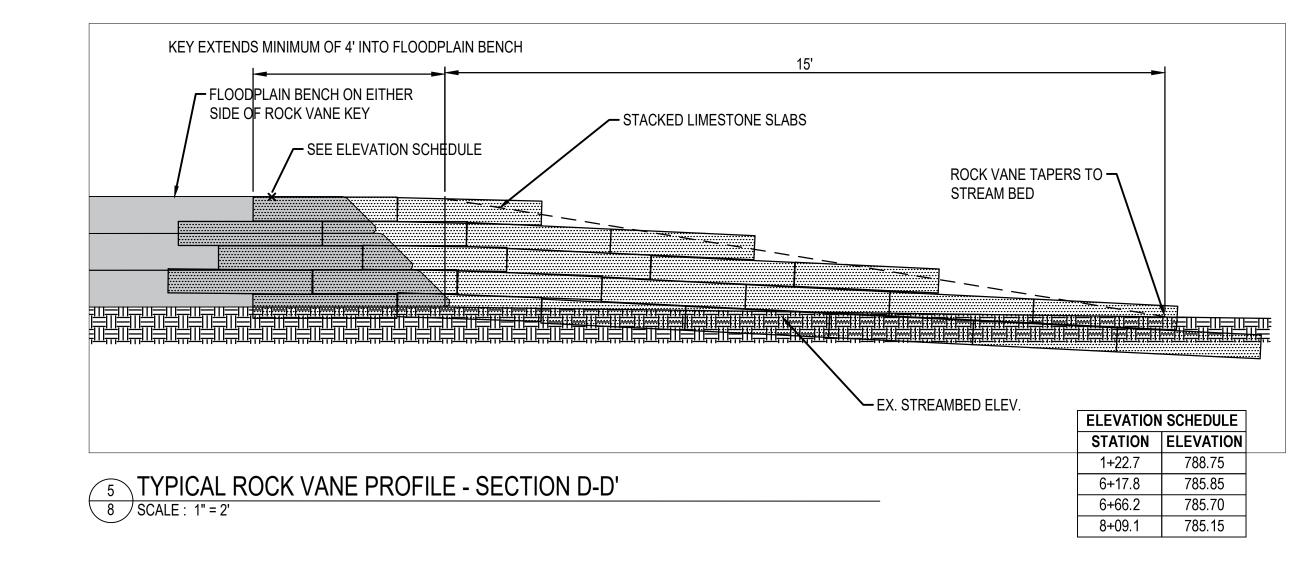
TYPICAL SECTION B-B' (STA 3+53 TO 5+38) 8 SCALE : 1" = 10'

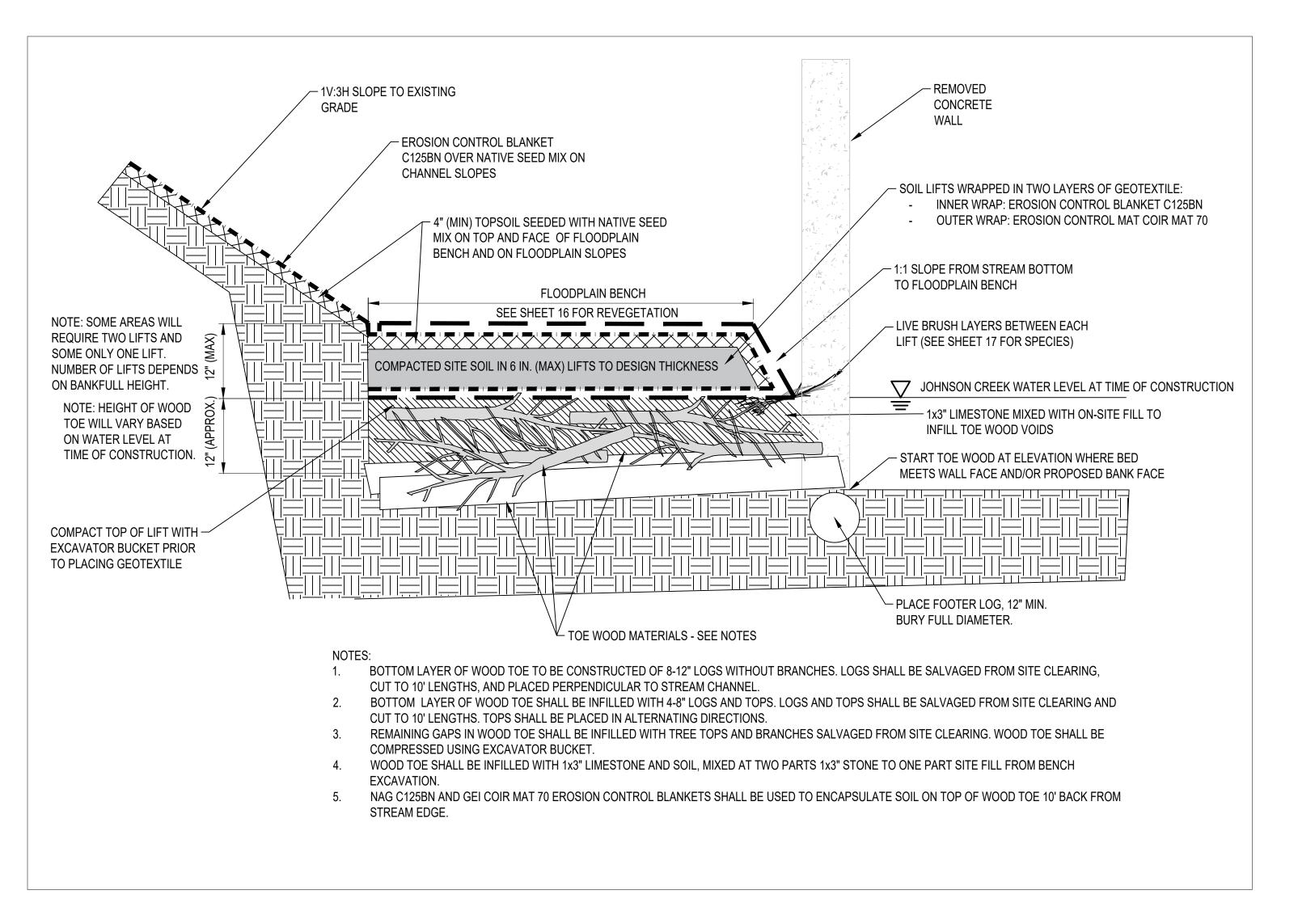


TYPICAL SECTION A-A' (STA 5+38 TO 8+54) 8 | SCALE : 1" = 10'



TYPICAL ROCK VANE - PLAN VIEW 8 | SCALE : 1" = 2'





VEGETATED MECHANICALLY-STABILIZED EARTH (VMSE) DETAIL (STA. 0+85 TO 3+53 AND STA. 5+38 TO 8+54) 8 NOT TO SCALE

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ROUGE RIVER AOC JOHNSON CREEK **FISH HATCHERY PARK HABITAT RESTORATION PROJECT**

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

FOR BIDDING **100% DESIGN DRAWINGS** 2-2020 PERMIT APPLICATION <u>9-2019</u> <u>7-26-19</u> PRE-APPLICATION MEETING **CLIENT MEETING** <u>5-1-19</u> PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER

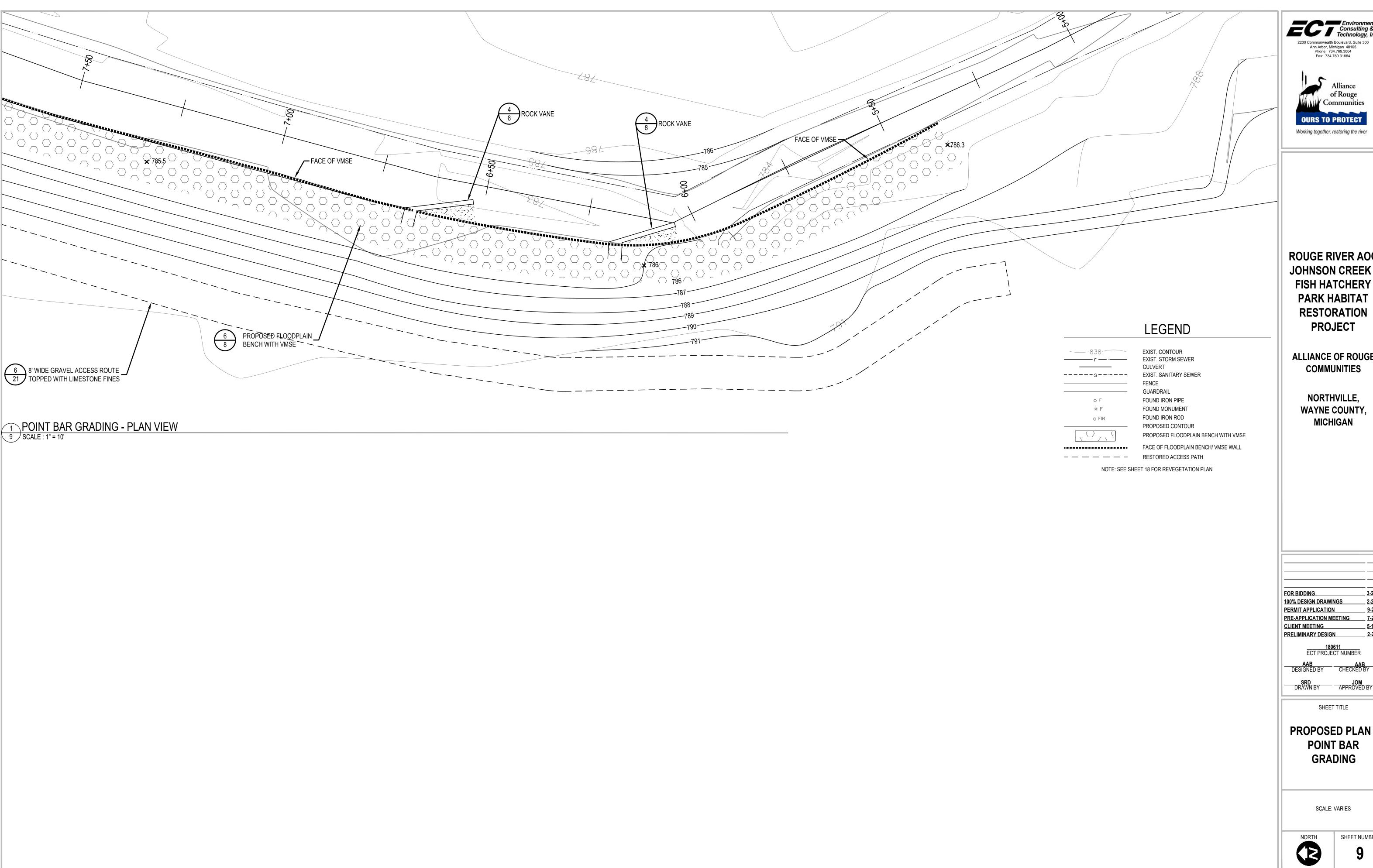
SHEET TITLE

PROPOSED CROSS **SECTIONS -**

SCALE: VARIES

JOHNSON CREEK

B



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ALLIANCE OF ROUGE COMMUNITIES

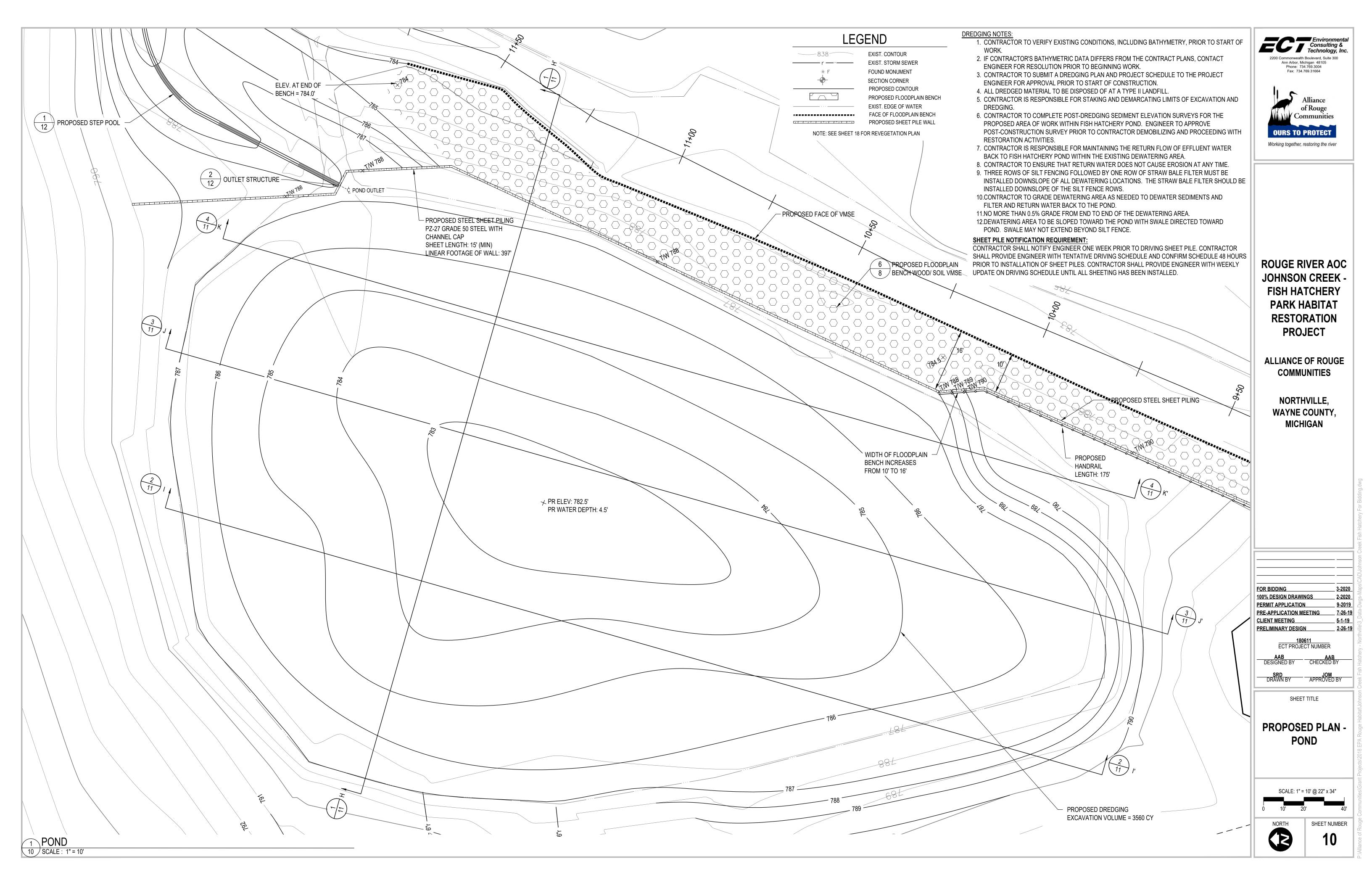
NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

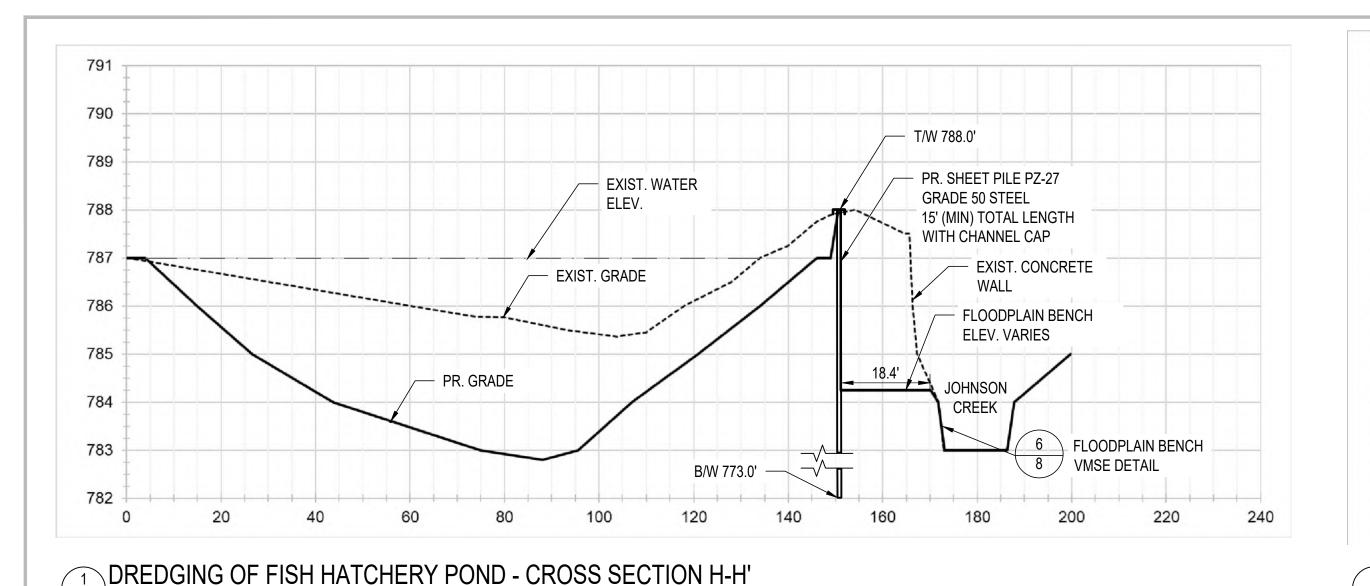
180611 ECT PROJECT NUMBER

SHEET TITLE

PROPOSED PLAN -**POINT BAR**

SCALE: VARIES



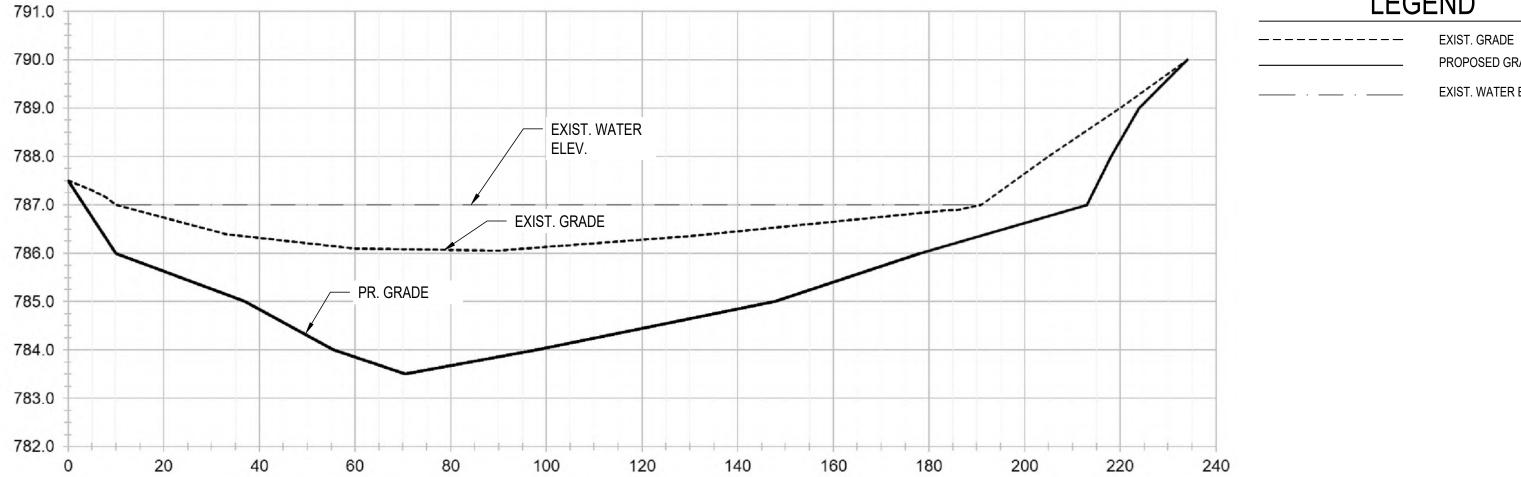


11 | SCALE - HORIZONTAL: 1" = 20' VERTICAL: 1" = 2'

20

783.0

782.0





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LEGEND

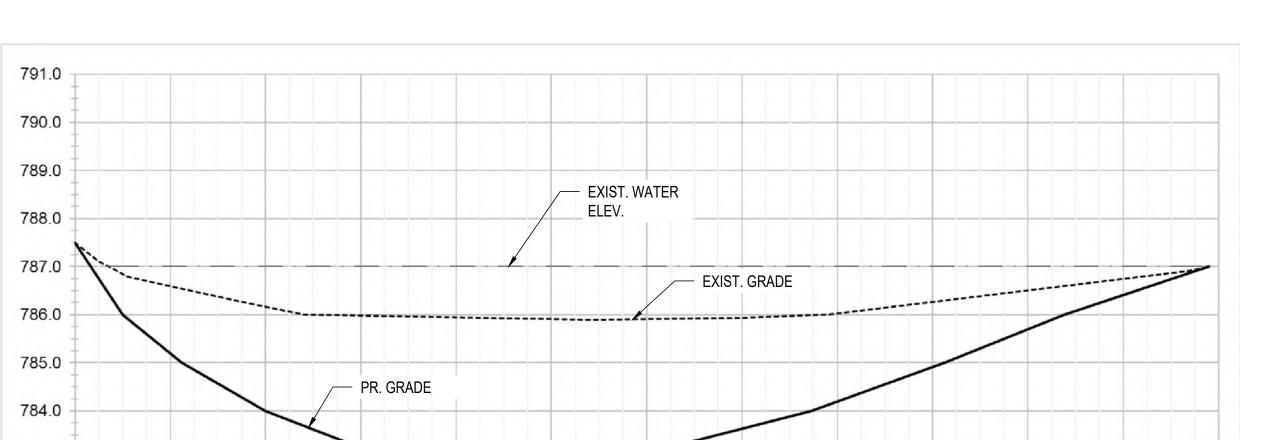
PROPOSED GRADE

EXIST. WATER ELEV.

FISH HATCHERY PARK HABITAT RESTORATION PROJECT

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, **WAYNE COUNTY, MICHIGAN**



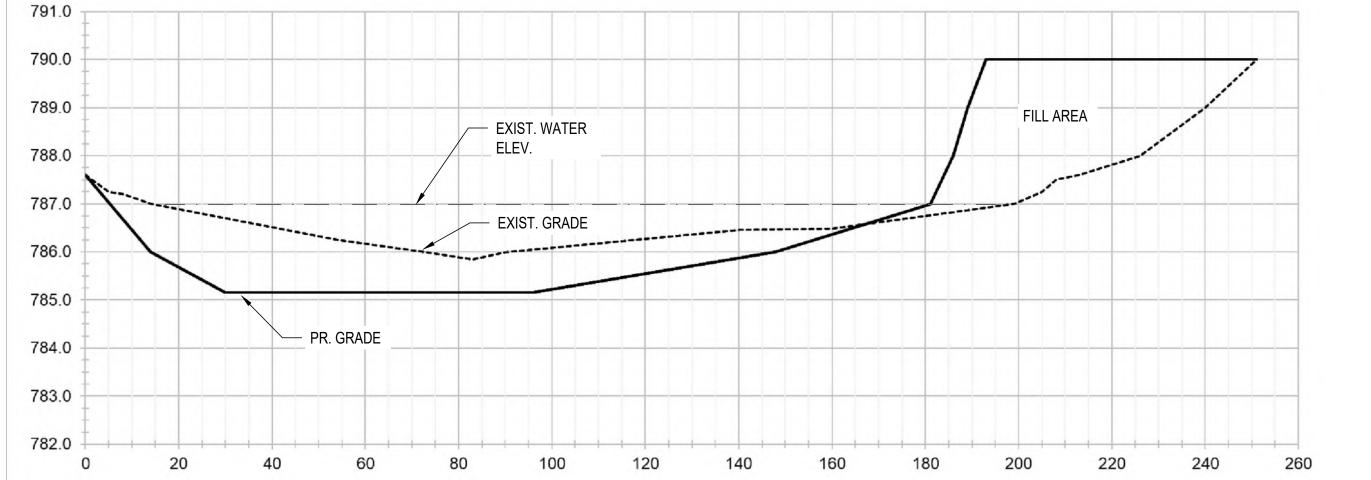
140



200

220

160



DREDGING OF FISH HATCHERY POND - CROSS SECTION K-K' 11 SCALE - HORIZONTAL: 1" = 20' VERTICAL: 1" = 2'

DREDGING OF FISH HATCHERY POND - CROSS SECTION I-I'

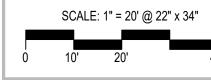
11 | SCALE - HORIZONTAL: 1" = 20' VERTICAL: 1" = 2'

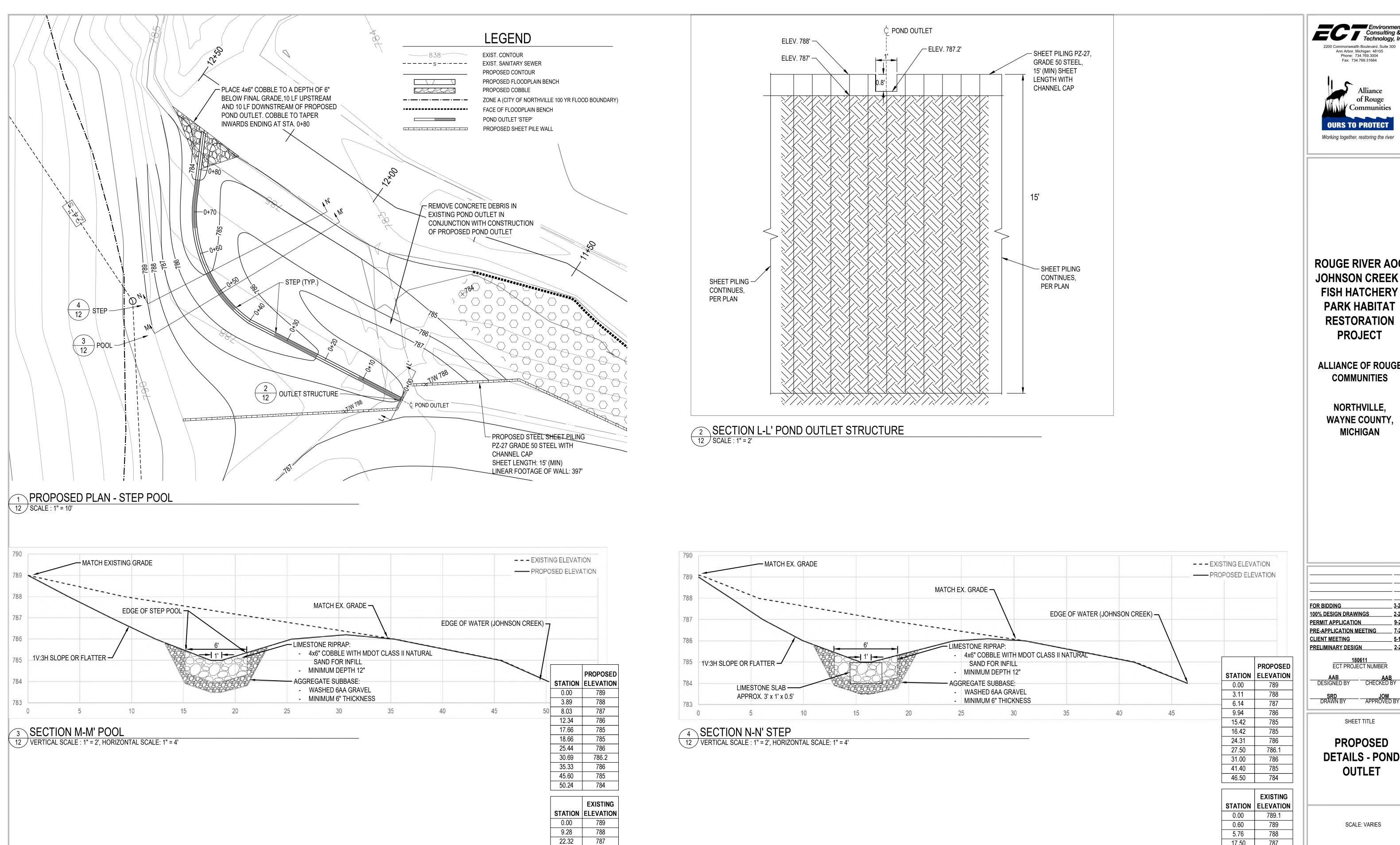
FOR BIDDING 100% DESIGN DRAWINGS <u>2-2020</u> PERMIT APPLICATION <u>9-2019</u> <u>7-26-19</u> PRE-APPLICATION MEETING <u>5-1-19</u> **CLIENT MEETING** PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER

SHEET TITLE

SRD JOM
DRAWN BY APPROVED BY

PROPOSED CROSS **SECTIONS - POND**





786

785

784

35.42

45.71

50.24

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> **ROUGE RIVER AOC** JOHNSON CREEK **FISH HATCHERY PARK HABITAT RESTORATION PROJECT**

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

<u>3-2020</u> 100% DESIGN DRAWINGS 2-2020 PERMIT APPLICATION <u>9-2019</u> <u>7-26-19</u> PRE-APPLICATION MEETING <u>5-1-19</u> PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER AAB AAB CHECKED BY

> SHEET TITLE **PROPOSED DETAILS - POND**

B

17.50

31.00

41.55

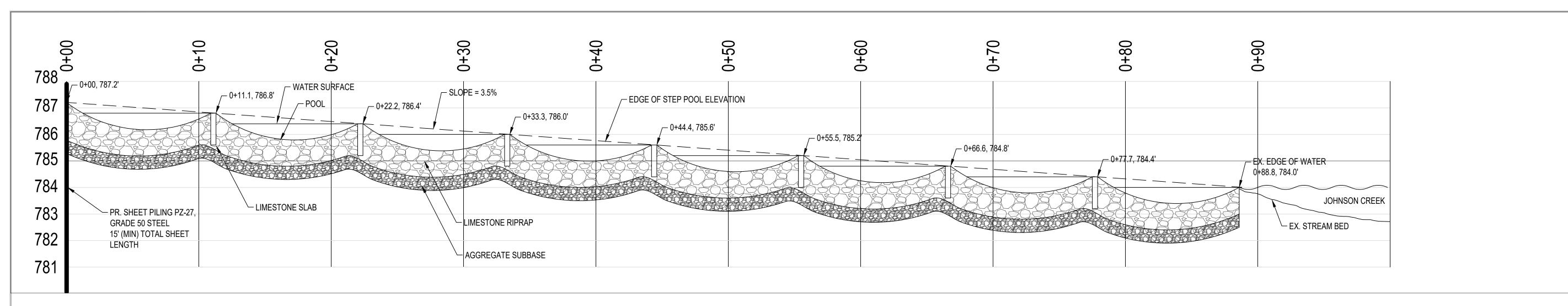
46.50

787

786

785

784

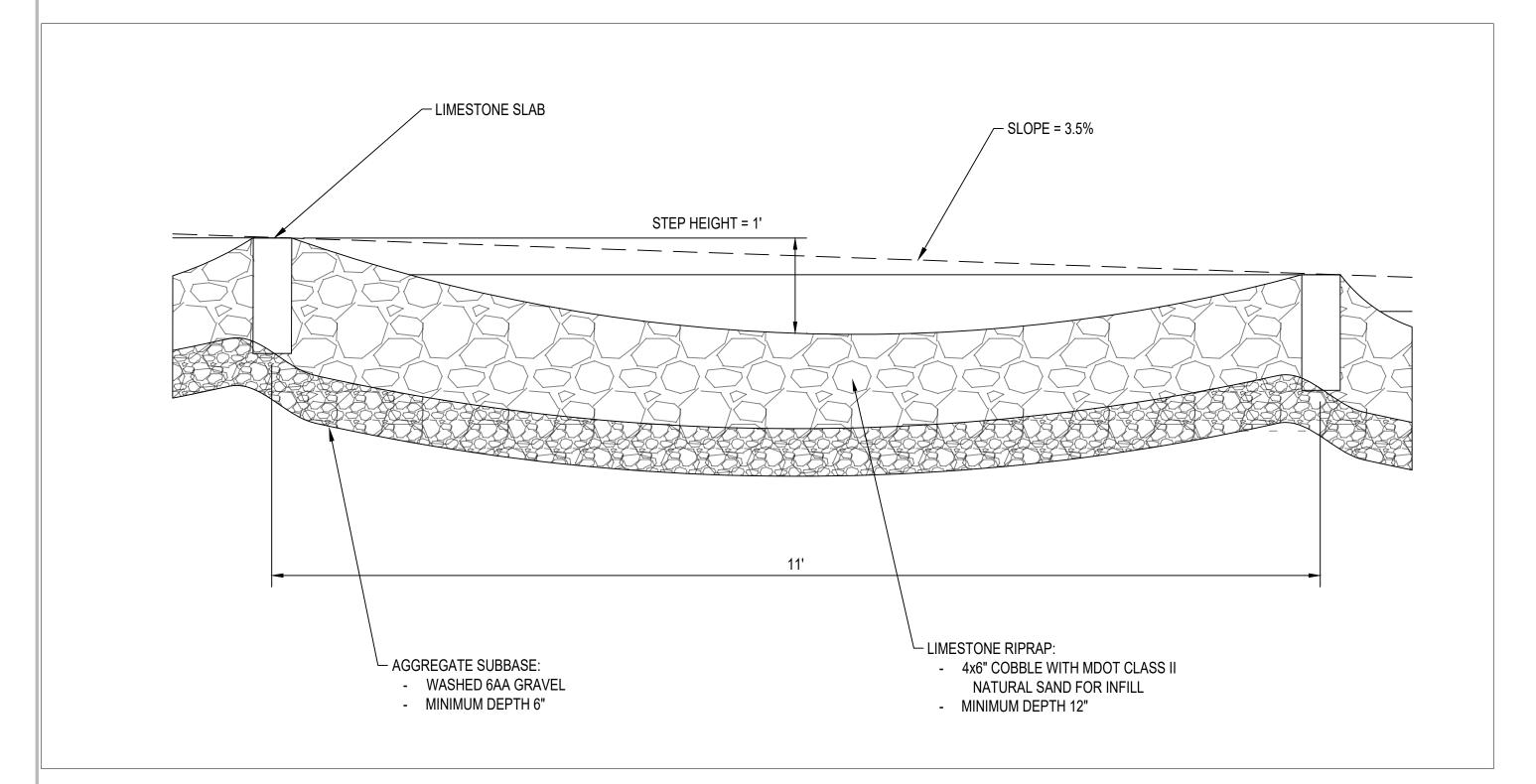


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1 STEP POOL PROFILE

13 VERTICAL SCALE : 1" = 0.5', HORIZONTAL SCALE: 1" = 4'



STEP POOL PROFILE DETAIL

SCALE: 1" = 2'

ROUGE RIVER AOC JOHNSON CREEK -FISH HATCHERY PARK HABITAT RESTORATION PROJECT

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

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PRE-APPLICATION MEETING 9-2019 7-26-19 5-1-19 CLIENT MEETING PRELIMINARY DESIGN <u>2-26-19</u>

180611 ECT PROJECT NUMBER

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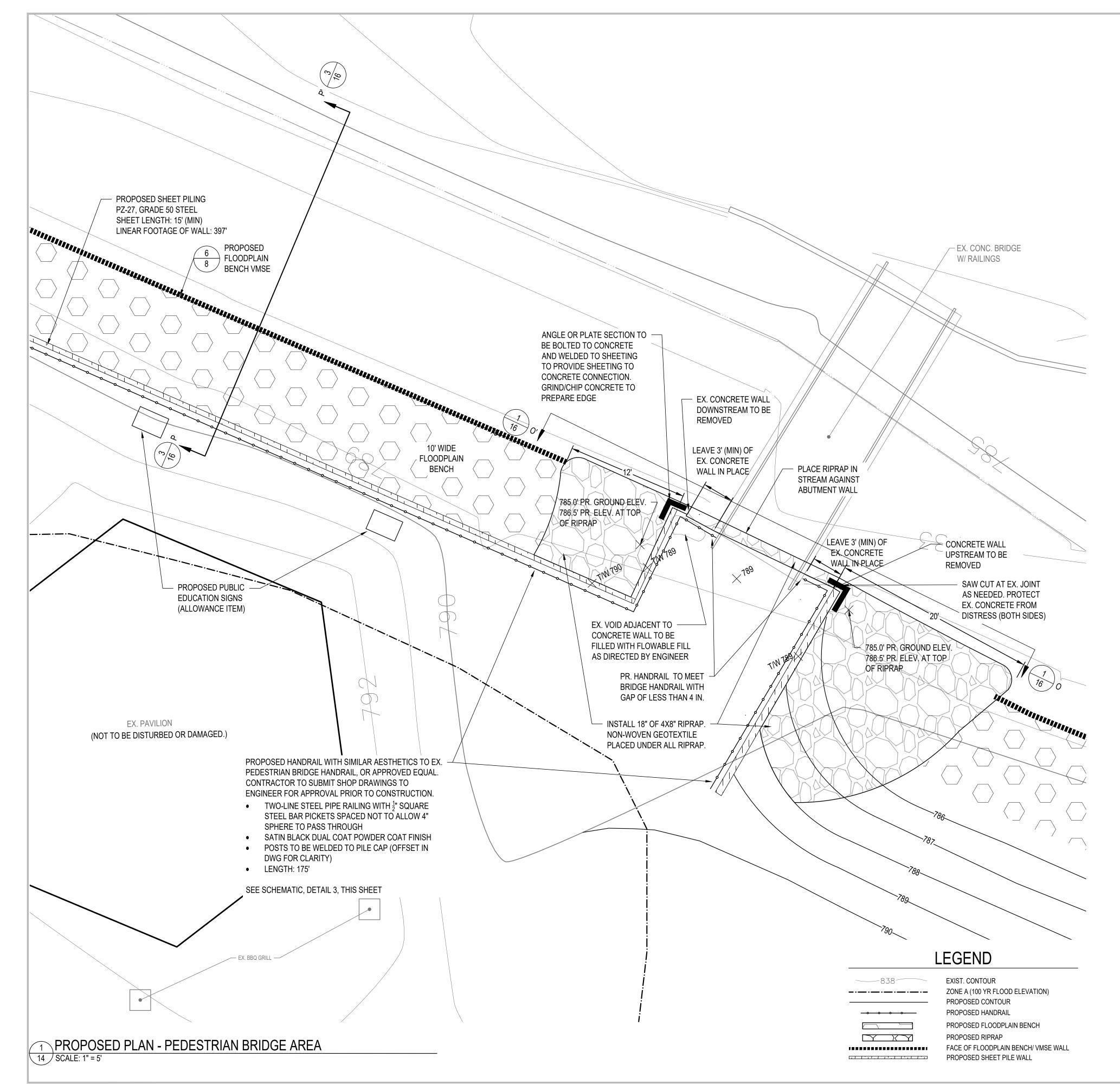
SHEET TITLE

PROPOSED PROFILE - POND OUTLET

SCALE: VARIES

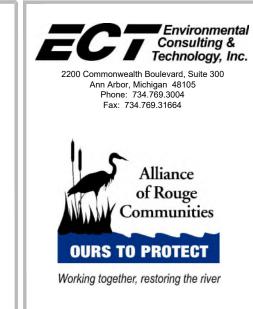
SHEET NUMBER

13



SHEET PILE NOTIFICATION REQUIREMENT:

CONTRACTOR SHALL NOTIFY ENGINEER ONE WEEK PRIOR TO DRIVING SHEET PILE. CONTRACTOR SHALL PROVIDE ENGINEER WITH TENTATIVE DRIVING SCHEDULE AND CONFIRM SCHEDULE 48 HOURS PRIOR TO INSTALLATION OF SHEET PILES. CONTRACTOR SHALL PROVIDE ENGINEER WITH WEEKLY UPDATE ON DRIVING SCHEDULE UNTIL ALL SHEETING HAS BEEN INSTALLED.



ROUGE RIVER AOC
JOHNSON CREEK FISH HATCHERY
PARK HABITAT
RESTORATION
PROJECT

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, MICHIGAN

FOR BIDDING 3-2020
100% DESIGN DRAWINGS 2-2020
PERMIT APPLICATION 9-2019
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CLIENT MEETING 5-1-19
PRELIMINARY DESIGN 2-26-19

180611
ECT PROJECT NUMBER

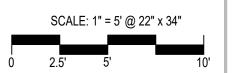
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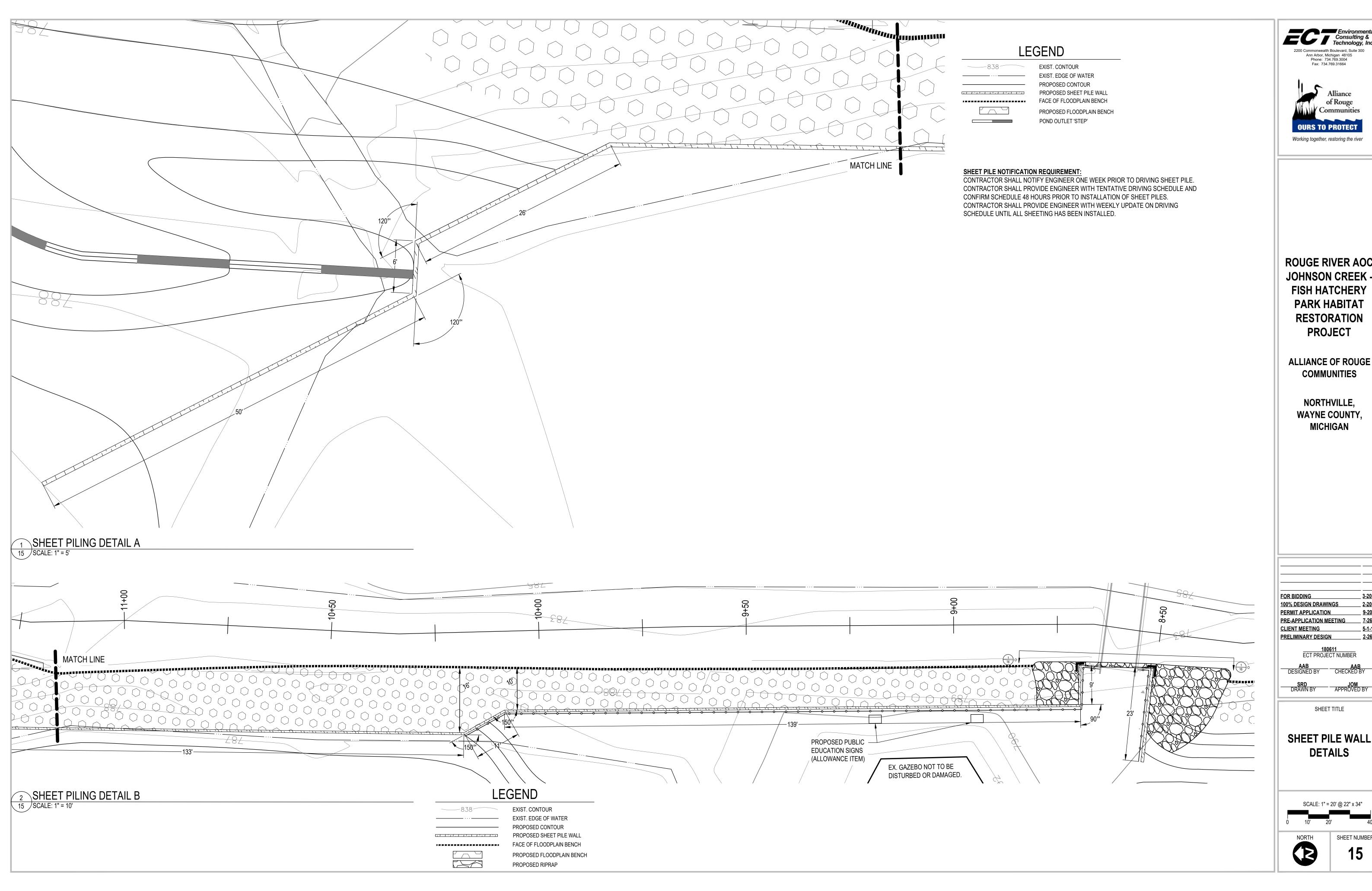
SHEET TITLE

SON CDEE

JOHNSON CREEK
PEDESTRIAN
BRIDGE







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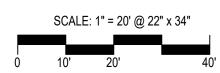
ROUGE RIVER AOC JOHNSON CREEK -FISH HATCHERY PARK HABITAT RESTORATION PROJECT

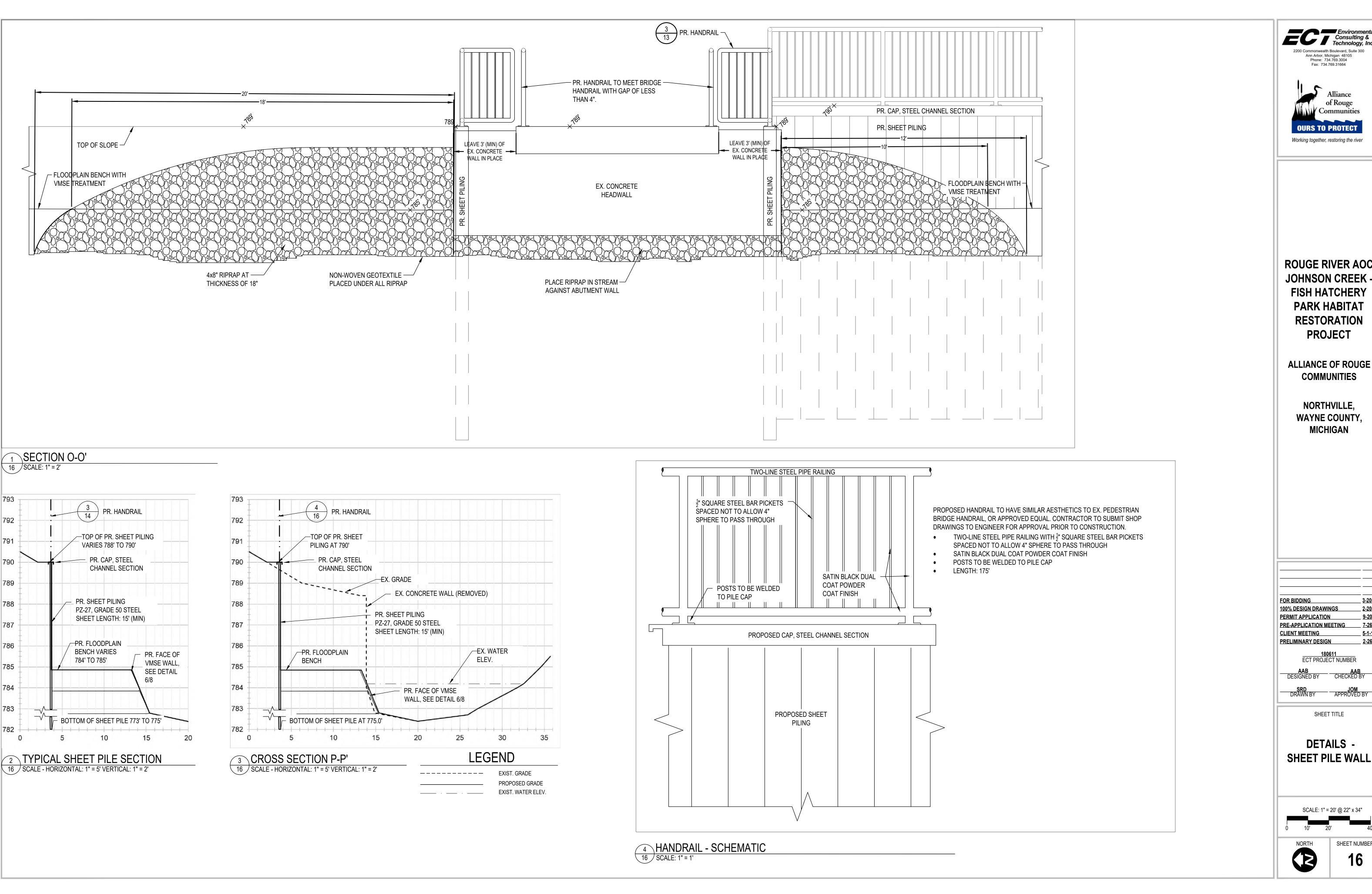
ALLIANCE OF ROUGE COMMUNITIES

WAYNE COUNTY, **MICHIGAN**

PRE-APPLICATION MEETING <u>5-1-19</u> <u>2-26-19</u> 180611 ECT PROJECT NUMBER

DETAILS





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ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

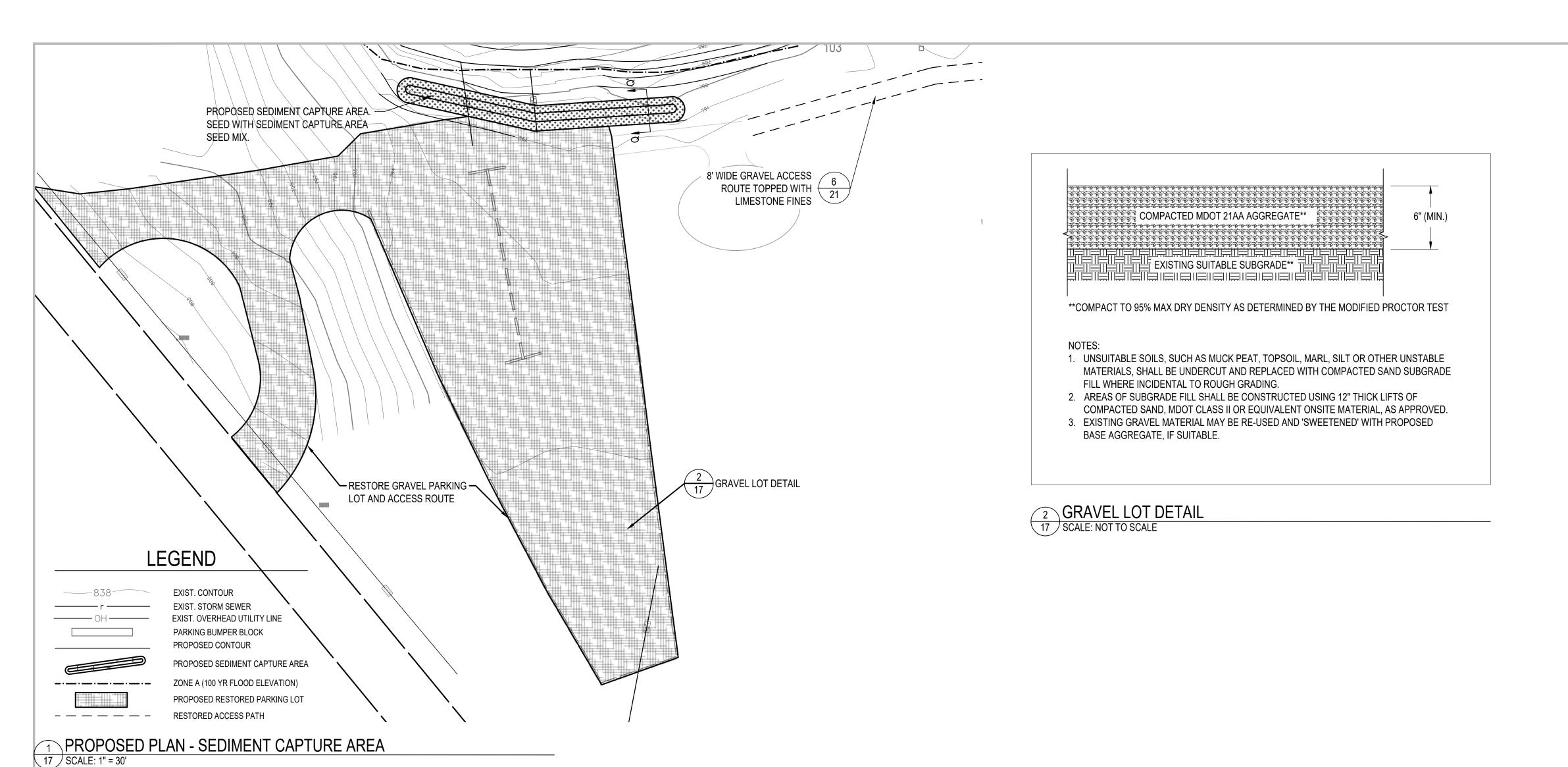
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DETAILS -

SHEET TITLE

SCALE: 1" = 20' @ 22" x 34"





SEED WITH SEDIMENT CAPTURE AREA

SEED WITH SEDIMENT CAPTURE AREA

SEED MIX

SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

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SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

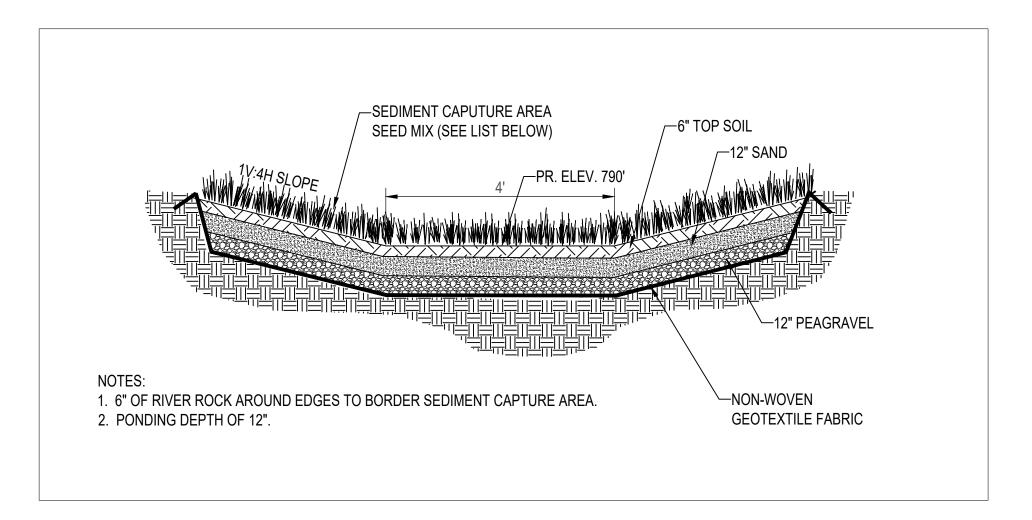
SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

SEED WITH SEDIMENT CAPTURE AREA CLOSEST TO PARKING LOT AT ELEV. 791.17

SEED WITH SEDIMENT CAPTURE

3 SEDIMENT CAPTURE AREA - PLAN VIEW

17 SCALE: 1" = 8'



4 SECTION Q-Q' TYPICAL SEDIMENT CAPTURE AREA SECTION 17 SCALE: NOT TO SCALE

SEDIMENT CAPTURE AREA SEED M

SCIENTIFIC NAME	COMMON NAME	OZ/AC
CAREX VULPINOIDEA	FOX SEDGE	25.00
ELYMUS CANADENSIS	CANADA WILD RYE	40.00
GLYCERIA STRIATA	FOWL MANNA GRASS	10.00
PANICUM VIRGATUM	SWITCH GRASS	12.00
SCHOENOPLECTUS ACUTUS	HARDSTEM BULRUSH	12.00
SCHOENOPLECTUS PUNGENS	THREE-SQUARE BULRUSH	12.00
TOTAL		111.00
AVENA SATIVA	SEED OATS	320.0



ROUGE RIVER AOC
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RESTORATION
PROJECT

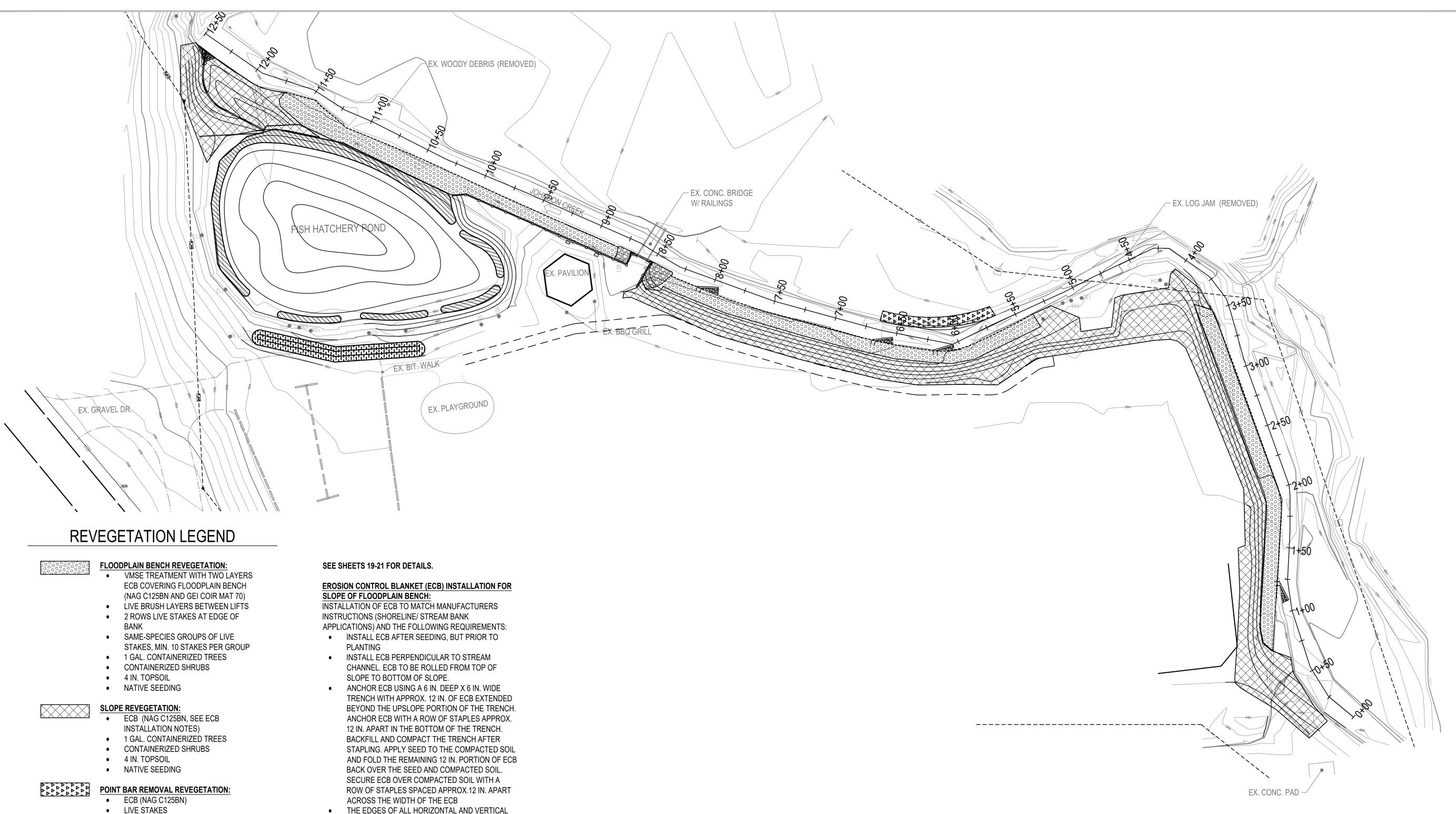
ALLIANCE OF ROUGE COMMUNITIES

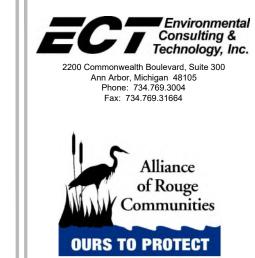
NORTHVILLE, WAYNE COUNTY, MICHIGAN

SEDIMENT CAPTURE AREA

SCALE: VARIES

NORTH





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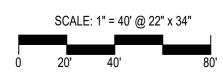
ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

FOR BIDDING <u>3-2020</u> <u>2-2020</u> 100% DESIGN DRAWINGS PERMIT APPLICATION <u>9-2019</u> <u>7-26-19</u> PRE-APPLICATION MEETING **CLIENT MEETING** <u>5-1-19</u> PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER

SRD JOM
DRAWN BY APPROVED BY

REVEGETATION



SHEET NUMBER 18

SHEET TITLE **PLAN - OVERVIEW**

• 6 IN. TOPSOIL NATIVE SEEDING POND REVEGETATION: EMERGENT PLANTINGS ALL OTHER DISTURBED AREA: ECB (NAG S75BN), HYDROSEEDING, OR BLOWN AND CRIMPED STRAW

4 IN. TOPSOIL

TURF SEEDING

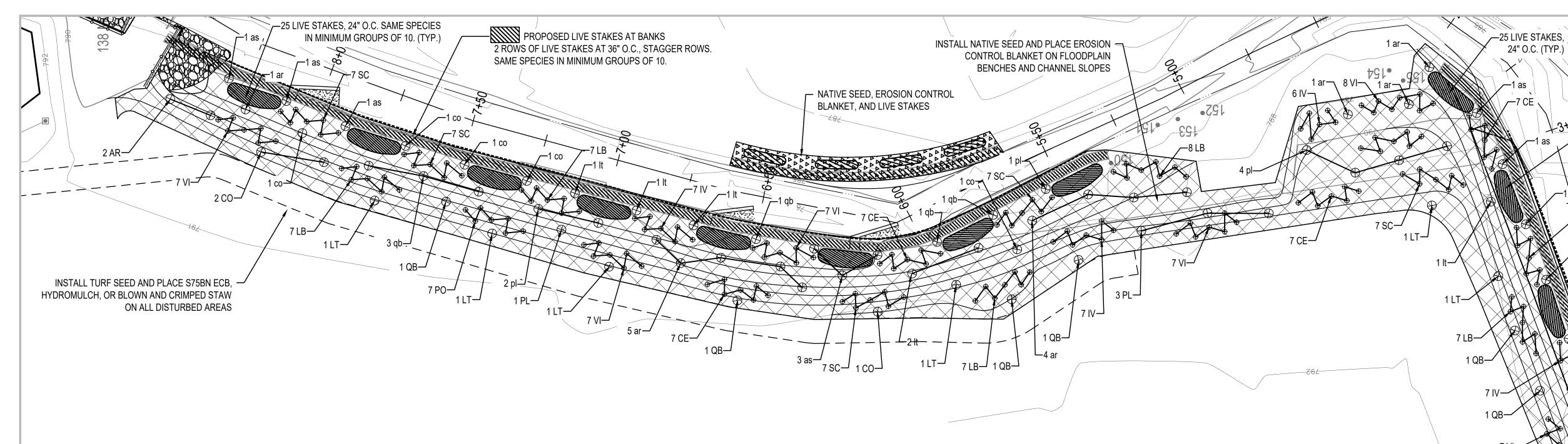
4 IN. TOPSOIL

NATIVE SEEDING

• ECB (NAG S75BN)

SEDIMENT CAPTURE AREA REVEGETATION:

- THE EDGES OF ALL HORIZONTAL AND VERTICAL SEAMS MUST BE STAPLED WITH A 2 IN. TO 5 IN. OVERLAP. SEAM OVERLAPS SHOULD BE SHINGLED IN THE STREAM FLOW DIRECTION.
- AN ADEQUATE NUMBER OF STAPLES MUST BE USED TO SECURE ECB. STAPLE PATTERN MUST MATCH "STAPLE PATTERN D" WITH MIN. STAPLE DENSITY OF 3.4 STAPLES PER SQUARE YARD.



TREES	s⊕				
SYM	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONT.
AR	5	ACER RUBRUM	RED MAPLE	2.5" CAL.	B&B
ar	17	ACER RUBRUM	RED MAPLE	N/A	1 GAL.
AS	1	ACER SACCHARINUM	SILVER MAPLE	2.5" CAL.	B&B
as	9	ACER SACCHARINUM	SILVER MAPLE	N/A	1 GAL.
CO	9	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2.5" CAL.	B&B
СО	7	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	N/A	1 GAL.
LT	6	LIRIODENDRON TULIPIFERA	TULIP POPLAR	2.5" CAL.	B&B
lt	9	LIRIODENDRON TULIPIFERA	TULIP POPLAR	N/A	1 GAL.
QB	10	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.	B&B
qb	10	QUERCUS BICOLOR	SWAMP WHITE OAK	N/A	1 GAL.
PL	4	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	2.5" CAL.	B&B
pl	9	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	N/A	1 GAL.

SHRU	BS ⊕				
SYM	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CON
CE	28	CEPHALANTHUS OCCIENTALIS	BUTTONBUSH	36" HT.	3 G
SC	32	SAMBUCUS CANADENSIS	AMERICAN ELDER	36" HT.	3 G
LB	118	LINDERA BENZOIN	SPICEBUSH	36" HT.	3 G
IV	32	ILEX VERTICILLATA	MICHIGAN HOLLY	36" HT.	3 G
VI	92	VIBURNUM TRILOBUM	NANNYBERRY	36" HT.	3 G

LIVE STAKE SPECIES LIST	(760 TOTAL):	
SCIENTIFIC NAME	COMMON NAME	
CORNUS SERICEA	RED-OSIER DOGW	OOD
CORNUS AMOMUM	SILKY DOGWOOD	
SALIX EXIGUA	SANDBAR WILLOV	V
SALIX DISCOLOR	PUSSY WILLOW	
SALIX SERICEA	SILKY WILLOW	
SALIX NIGRA	BLACK WILLOW	
SALIX AMYGDALOIDES	PEACH-LEAF WILL	.OW

LISTED SPECIES ARE TO BE EQUALLY REPRESENTED.

LIVE BRUSH LAYERS SPE	CIES I IST:	
SCIENTIFIC NAME	COMMON NAME	
CORNUS SERICEA	RED-OSIER DOGWOOD	
CORNUS AMOMUM	SILKY DOGWOOD	
SALIX EXIGUA	SANDBAR WILLOW	
SALIX DISCOLOR	PUSSY WILLOW	
SALIX SERICEA	SILKY WILLOW	
SALIX NIGRA	BLACK WILLOW	
SALIX AMYGDALOIDES	PEACH-LEAF WILLOW	

LISTED SPECIES ARE TO BE EQUALLY REPRESENTED.

BRUSH LAYER SIZES: 5 LF (MINIMUM) PER BUNDLE, 3-4 BRANCHES THICK.

INSTALLATION NOTES: LIVE BRUSH LAYERS TO BE PLACED BETWEEN ENCAPSULATED SOIL LIFTS IN FLOODPLAIN BENCHES WITH TWO-THIRDS OF THE BASAL MATERIAL TILTED INTO THE SLOPE AND COVERED WITH SOIL. BRANCHES SHOULD PROTRUDE BEYOND THE FACE OF THE TERRACE. STARTING WITH THE FIRST SOIL LIFT ABOVE THE WATER ELEVATION AT THE TIME OF CONSTRUCTION, ADDITIONAL LIVE BRUSH LAYERS SHOULD BE ADDED BETWEEN EVERY SOIL LIFT PROCEEDING UP THE FACE OF THE STREAM BANK. PLANTING SHOULD BE DONE DURING THE DORMANT SEASON.

WET TO MESIC SEED MIX		
SCIENTIFIC NAME	COMMON NAME	OZ/AC
GRASSES/SEDGES		
ANDROPOGON GERARDII	BIG BLUESTEM GRASS	16.00
CALAMAGROSTIS CANADENSIS	BLUEJOINT GRASS	1.000
CAREX LURIDA	BOTTLEBRUSH SEDGE	3.000
CAREX STRICTA	COMMON TUSSOCK SEDGE	1.000
CAREX VULPINOIDEA	BROWN FOX SEDGE	1.000
ELYMUS HYSTRIX	BOTTLEBRUSH GRASS	1.000
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	24.00
JUNCUS CANADENSIS	CANADIAN RUSH	0.500
JUNCUS EFFUSUS	SOFT RUSH	1.000
PANICUM VIRGATUM	SWITCH GRASS	2.000
SCIRPUS CYPERINUS	WOOL GRASS	0.500
SORGHASTRUM NUTANS	INDIAN GRASS	8.000
SPARTINA PECTINATA	PRAIRIE CORD GRASS	3.000
5174KTHVKT 25THVKT/K		0.000
FORBS		
ASCLEPIAS SYRIACA	COMMON MILKWEED	2.000
ASCLEPIAS INCARNATA	SWAMP MILKWEED	2.000
COREOPSIS LANCEOLATA	SAND COREOPSIS	4.000
COREOPSIS TRIPTERIS	TALL COREOPSIS	2.000
DOELLINGERIA UMBELLATA	FLAT TOPPED ASTER	0.500
ECHINACEA PURPUREA	PURPLE CONEFLOWER	4.000
EUPATORIUM MACULATUM	JOE PYE WEED	1.000
EUPATORIUM PERFOLIATUM	COMMON BONESET	0.500
HELENIUM AUTUMNALE	SNEEZEWEED	2.000
IRIS VIRGINICA	BLUE FLAG IRIS	2.000
LIATRIS SPICATA	MARSH BLAZING STAR	
LOBELIA CARDINALIS	CARDINAL FLOWER	1.000 0.250
LOBELIA CARDINALIS	GREAT BLUE LOBELIA	
PHYSOSTEGIA VIRGINIANA	OBEDIENT PLANT	2.000
		0.250
PYCNANTHEMUM VIRGINIANUM	COMMON MOUNTAIN MINT	0.500
RUDBECKIA LACINATA	GREEN CONEFLOWER	1.000
RATIBIDA PINNATA	YELLOW CONEFLOWER	4.000
RUDBECKIA HARTA	BLACK-EYED SUSAN	4.000
RUDBECKIA LACINIATA	WILD GOLDEN GLOW	1.000
SOLIDAGO JUNCEA	EARLY GOLDENROD	0.250
SOLIDAGO RUGOSA	ROUGH GOLDENROD	0.250
SYMPHYOTRICHUM NOVAE-ANGLIAE	NEW ENGLAND ASTER	0.500
SYMPHYOTRICHUM PUNICEUM	BRISTLY ASTER	1.000
VERONIA MISSURICA	IRONWEED	3.000
ZIZIA AUREA	GOLDEN ALEXANDERS	0.250
	TOTAL	100.25
COVER CROP		
AVENA SATIVA	COMMON OAT	500.0

REVEGETATION LEGEND

FLOODPLAIN BENCH REVEGETATION:

- VMSE TREATMENT WITH TWO LAYERS ECB COVERING FLOODPLAIN BENCH (NAG C125BN AND GEI COIR MAT 70)
- LIVE BRUSH LAYERS BETWEEN LIFTS 2 ROWS LIVE STAKES AT EDGE OF
- SAME-SPECIES GROUPS OF LIVE STAKES, MIN. 10 STAKES PER GROUP
- 1 GAL. CONTAINERIZED TREES
- CONTAINERIZED SHRUBS
- 4 IN. TOPSOIL NATIVE SEEDING

SLOPE REVEGETATION:

- ECB (NAG C125BN, SEE ECB
- INSTALLATION NOTES) 1 GAL. CONTAINERIZED TREES
- CONTAINERIZED SHRUBS
- 4 IN. TOPSOIL
- NATIVE SEEDING

POINT BAR REMOVAL REVEGETATION:

- ECB (NAG C125BN)
- LIVE STAKES 4 IN. TOPSOIL
- NATIVE SEEDING

SEDIMENT CAPTURE AREA REVEGETATION:

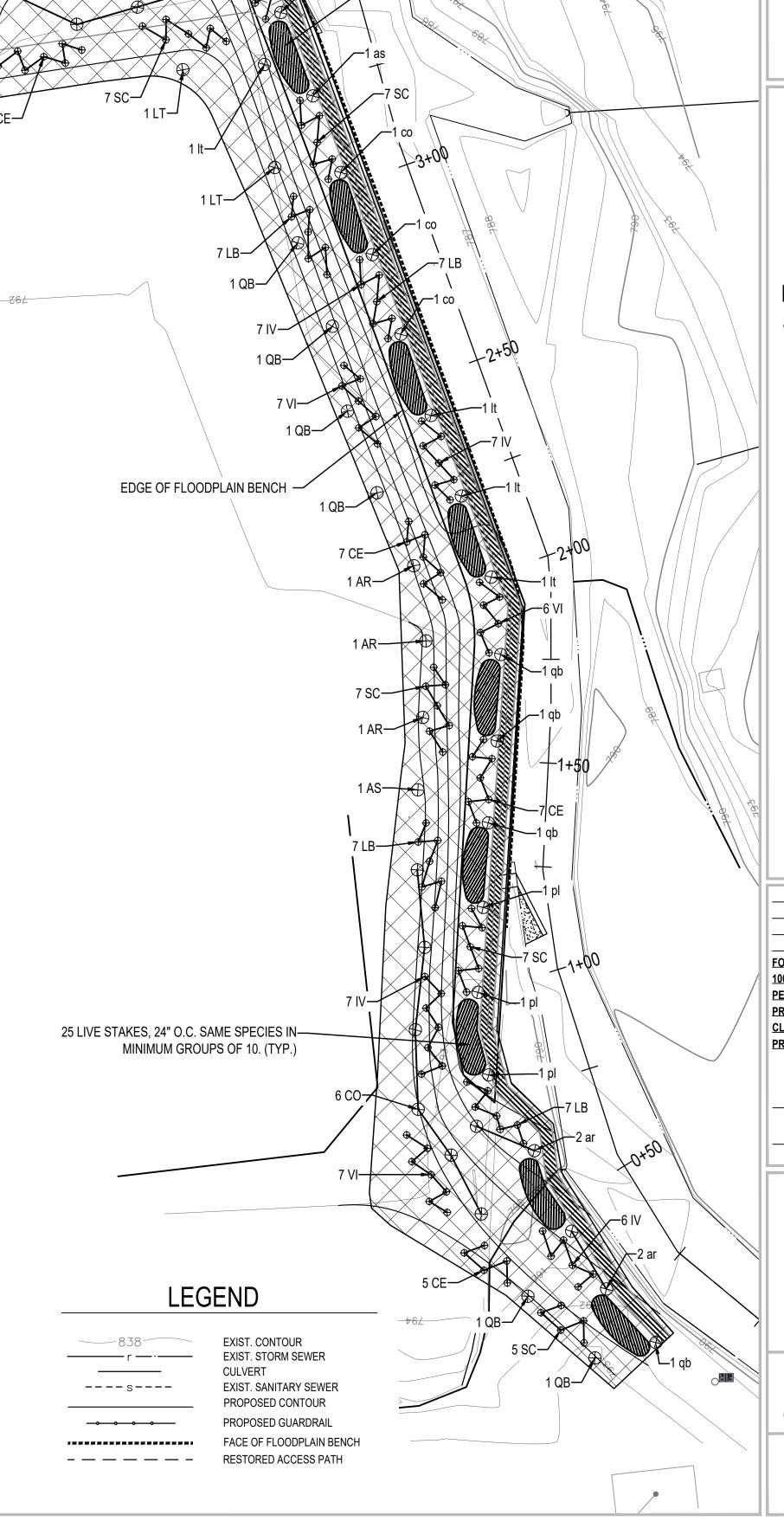
- ECB (NAG S75BN)
- 6 IN. TOPSOIL NATIVE SEEDING

POND REVEGETATION:

EMERGENT PLANTINGS

ALL OTHER DISTURBED AREA:

- ECB (NAG S75BN), HYDROSEEDING,
- OR BLOWN AND CRIMPED STRAW
- 4 IN. TOPSOIL
- TURF SEEDING



ROUGE RIVER AOC JOHNSON CREEK FISH HATCHERY PARK HABITAT RESTORATION PROJECT

200 Commonwealth Boulevard, Suite 300

Ann Arbor, Michigan 48105 Phone: 734.769.3004 Fax: 734.769.31664

OURS TO PROTECT

Working together, restoring the river

25 LIVE STAKES, 24" O.C. SAME SPECIES

IN MINIMUM GROUPS OF 10. (TYP.)

ALLIANCE OF ROUGE COMMUNITIES

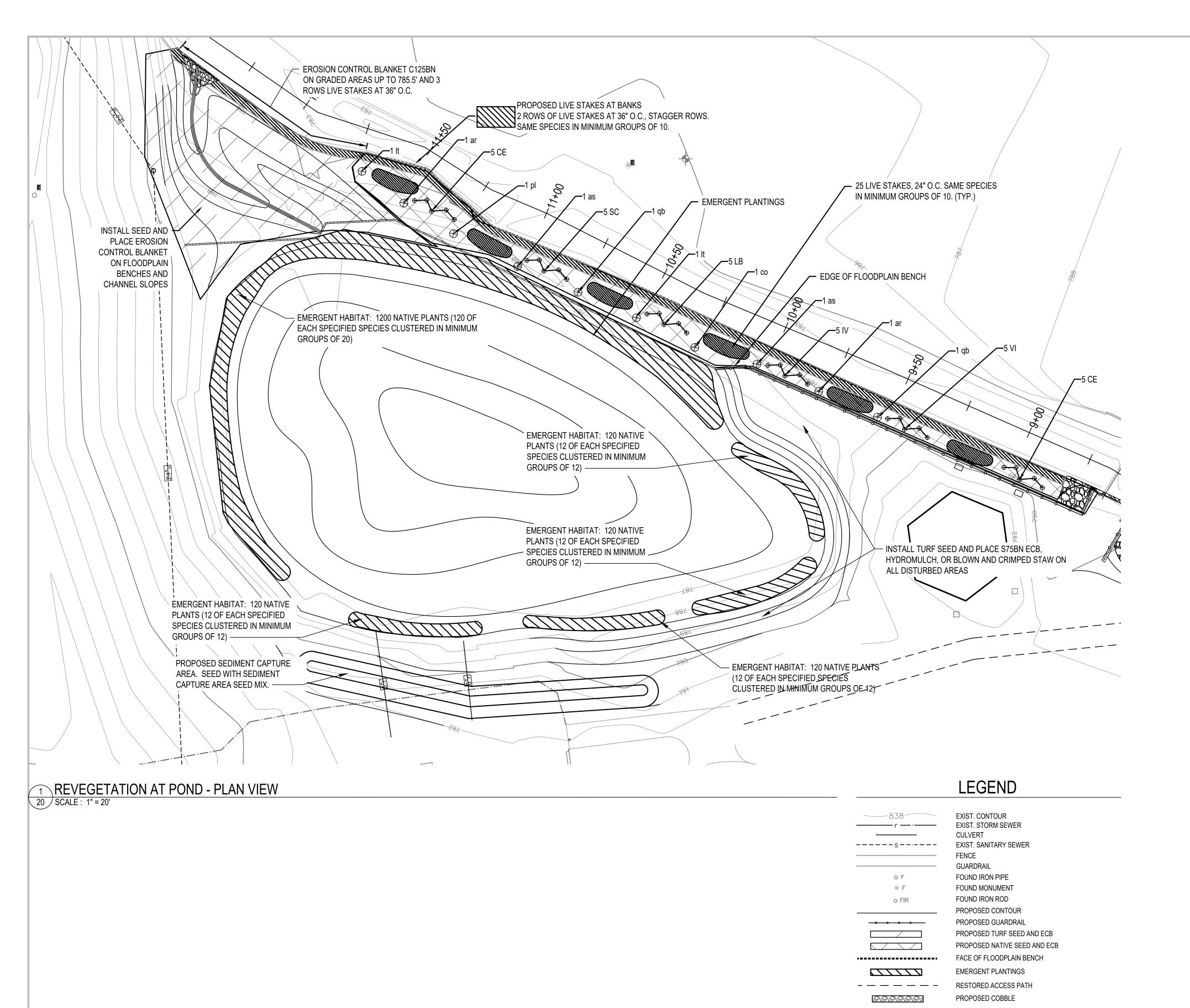
NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

FOR BIDDING 100% DESIGN DRAWINGS 2-2020 PERMIT APPLICATION <u>9-2019</u> PRE-APPLICATION MEETING <u>7-26-19</u> CLIENT MEETING <u>5-1-19</u> PRELIMINARY DESIGN <u>2-26-19</u> 180611 ECT PROJECT NUMBER

SHEET TITLE

REVEGETATION PLAN -**JOHNSON CREEK**

SCALE: 1" = 20' @ 22" x 34"



EMERGENT PLANT LIST 168 NUPHAR ADVENA O 168 NYMPHAEA ODORATA PC 168 PONTEDERIA CORDATA PV 168 PELTANDRA VIRGINICA
SA 168 SCHOENOPLECTUS ACUTL
SL 168 SAGITTARIA LATIFOLIA C. BARE ROOT 0"- 6" BELOW WATER
C. PLUG/BARE ROOT 0"- 6" BELOW WATER
C. PLUG/BARE ROOT 0"- 6" BELOW WATER HARD-STEMMED BULRUSH COMMON ARROWHEAD BF 168 *BOLBOSCHOENUS FLUVIATILIS* RIVER BULRUSH ST 168 *SCHOENOPLECTUS TABERNAEMONTANI* GREAT BULRUSH SP 168 SPARGANIUM AMERICANUM AM. BUR REED 18" O.C. PLUG/BARE ROOT 0"- 6" BELOW WATER

TREES	s 🕀				
SYM	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONT.
ar	2	ACER RUBRUM	RED MAPLE	N/A	1 GAL.
as	2	ACER SACCHARINUM	SILVER MAPLE	N/A	1 GAL.
CO	1	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	N/A	1 GAL.
lt	2	LIRIODENDRON TULIPIFERA	TULIP POPLAR	N/A	1 GAL.
qb	2	QUERCUS BICOLOR	SWAMP WHITE OAK	N/A	1 GAL.
pl	1	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	N/A	1 GAL.

SHRU	BS ⊕				
SYM	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONT.
CE	10	CEPHALANTHUS OCCIENTALIS	BUTTONBUSH	36" HT.	3 GAL.
SC	5	SAMBUCUS CANADENSIS	AMERICAN ELDER	36" HT.	3 GAL.
LB	5	LINDERA BENZOIN	SPICEBUSH	36" HT.	3 GAL.
IV	5	ILEX VERTICILLATA	MICHIGAN HOLLY	36" HT.	3 GAL.
VI	5	VIBURNUM TRILOBUM	NANNYBERRY	36" HT.	3 GAL.

LIVE STAKE SPECIES LIST (280 TOTAL): SCIENTIFIC NAME **COMMON NAME CORNUS SERICEA** RED-OSIER DOGWOOD **SILKY DOGWOOD CORNUS AMOMUM** SALIX EXIGUA SANDBAR WILLOW SALIX DISCOLOR **PUSSY WILLOW** SALIX SERICEA **SILKY WILLOW SALIX NIGRA BLACK WILLOW** PEACH-LEAF WILLOW SALIX AMYGDALOIDES

LISTED SPECIES ARE TO BE EQUALLY REPRESENTED.

ES LIST:
COMMON NAME
RED-OSIER DOGWOOD
SILKY DOGWOOD
SANDBAR WILLOW
PUSSY WILLOW
SILKY WILLOW
BLACK WILLOW
PEACH-LEAF WILLOW

LISTED SPECIES ARE TO BE EQUALLY REPRESENTED.

BRUSH LAYER SIZES: 5 LF (MINIMUM) PER BUNDLE, 3-4 BRANCHES THICK.

INSTALLATION NOTES: LIVE BRUSH LAYERS TO BE PLACED BETWEEN ENCAPSULATED SOIL LIFTS IN FLOODPLAIN BENCHES WITH TWO-THIRDS OF THE BASAL MATERIAL TILTED INTO THE SLOPE AND COVERED WITH SOIL. BRANCHES SHOULD PROTRUDE BEYOND THE FACE OF THE TERRACE. STARTING WITH THE FIRST SOIL LIFT ABOVE THE WATER ELEVATION AT THE TIME OF CONSTRUCTION, ADDITIONAL LIVE BRUSH LAYERS SHOULD BE ADDED BETWEEN EVERY SOIL LIFT PROCEEDING UP THE FACE OF THE STREAM BANK. PLANTING SHOULD BE DONE DURING THE DORMANT SEASON.

Environmental Consulting & Technology, Inc. 200 Commonwealth Boulevard, Suite 300 Ann Arbor, Michigan 48105 Phone: 734.769.3004 Fax: 734.769.31664 Communities

OURS TO PROTECT

Working together, restoring the river

ROUGE RIVER AOC JOHNSON CREEK **FISH HATCHERY PARK HABITAT RESTORATION PROJECT**

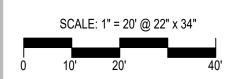
ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

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SHEET TITLE

REVEGETATION PLAN - POND



NOTES:

1. INSTALL IN MUDFLAT/TILL ZONE AS DIRECTED BY LANDSCAPE ECOLOGIST, DURING FIRST DORMANT SEASON FOLLOWING SEEDING

GROUND, AND FIRMLY PACK SOIL AROUND IT. ORIENT THE BUDS UP.

2. INSTALL LIVE STAKES AT RIGHT ANGLES PUSH INTO THE GROUND BY HAND. DEAD BLOW HAMMER AND PILOT HOLES AS NECESSARY.

4. INSTALL STAKES 3 FEET APART IN TRIANGULAR SPACING PATTERN.

3. BURY FOUR-FIFTHS OF THE STAKE IN THE

LIVE STAKE INSTALLATION 21 NO SCALE

PLANT ALL SHRUBS VERTICAL.

PRUNE ALL DEAD OR DAMAGED BRANCHES

4" BARK MULCH TO COVER ENTIRE PLANTING — HOLE. TAPER MULCH TO BASE OF PLANT.

PROVIDE 3" SOIL SAUCER AROUND EACH PLANT —

BACKFILL WITH MIX OF 50% IMPORTED TOPSOIL AND 50% EXCAVATED SITE SOIL & TAMP LIGHTLY

WATER TO SATURATE BACKFILL MATERIAL WITH IN 8 HOURS OF PLANTING

IF CONTAINER STOCK IS ROOT BOUND, MAKE 4 VERTICAL CUTS IN EACH ROOT BALL WITH SHARP BLADE

SCARIFY BOTTOM AND SIDEWALLS OF PLANTING PIT.

4 SHRUB PLANTING DETAIL NOT TO SCALE

NOTES: TREE SHALL BE PLANTED WITH TOP OF ROOT BALL AT OR SLIGHTLY ABOVE FINISH GRADE - NEVER LOWER.

PRUNE ONLY AS DIRECTED EXCEPT FOR REMOVING DEAD OR BROKEN BRANCHES; RETAIN NATURAL FORM; DO NOT CUT LEADER.

4" MULCH TO COVER -ENTIRE PLANTING HOLE. TAPER MULCH TO TRUNK. CREATE **CONTINUOUS 6"** EARTH SAUCER.

SPECIFIED-BACKFILL SOIL ENTIRE RAP IF NON-BIODEGRADEABLE AFTER PLACING TREE IN PIT SCARIFY BOTTOM AND SIDEWALLS OF PLANTING PIT.

-REMOVE TOP 1/3

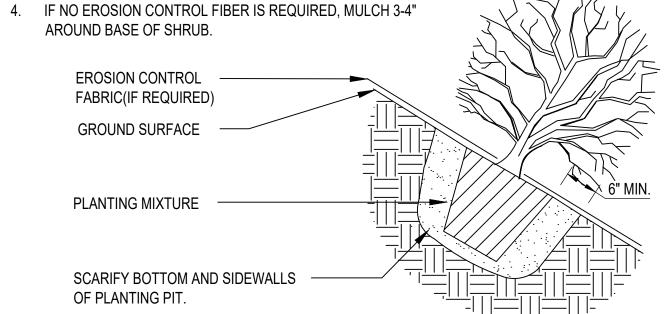
OF BURLAP OR

-6" EARTH PEDESTAL OF UNDISTURBED OR COMPACTED SOIL.

DECIDUOUS TREE PLANTING 21 NOT TO SCALE

NOTES:

- 1. SHRUB SHALL BEAR SAME OR SLIGHTLY HIGHER RELATION TO FINISH GRADE AS TO PRIOR GRADE - NEVER LOWER.
- PRUNE ONLY AS DIRECTED EXCEPT FOR REMOVING DEAD OR BROKEN BRANCHES; RETAIN NATURAL FORM.
- 3. PLANT SHRUBS WITH MAIN LEADER PERPENDICULAR TO THE GROUND SURFACE.



5 SLOPE SHRUB PLANTING 21 NOT TO SCALE

1. TREE SHALL BEAR SAME OR SLIGHTLY HIGHER RELATION TO FINISH GRADE AS TO PRIOR GRADE - NEVER LOWER.

2. CREATE HORIZONTAL SHELF FOR TREE WHEN PLANTING ON A SLOPE. DO NOT FILL OVER ROOT BALL ON

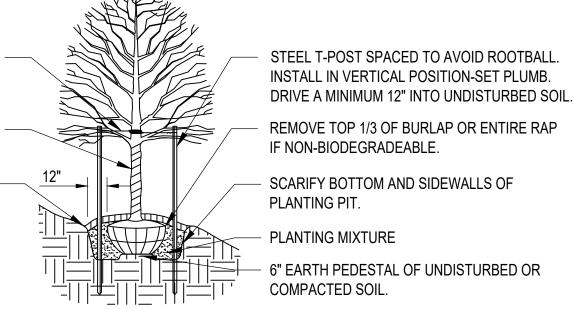
PRUNE ONLY AS DIRECTED EXCEPT FOR REMOVING DEAD OR BROKEN BRANCHES; RETAIN NATURAL FORM; DO NOT CUT LEADER.

4. BRACE ALL DECIDUOUS TREES UP TO 4" WITH TWO STAKES.

#11 GALVANIZED WIRE WRAPPED ONE REVOLUTION AND BETWEEN RIDGES OF T-POST TREE WRAP FROM BASE TO FIRST

BRANCH.

3"-4" MULCH TO COVER ENTIRE PLANTING HOLE. TAPER MULCH TO TRUNK. CREATE 6" EARTH SAUCER ON SITES WITHOUT IRRIGATION.



STEEL T-POST SPACED TO AVOID ROOTBALL. INSTALL IN VERTICAL POSITION-SET PLUMB.

TREE TRUNK

STEEL T-POST

#11 GAL. WIRE SHALL BE

RUBBER HOSE- ¹/₂" BY 12"

MIN. LENGTH NEW HOSES.

SEMI-TAUGHT, ALLOWING FOR

 $\frac{1}{2}$ " MOVEMENT OF THE TREE.

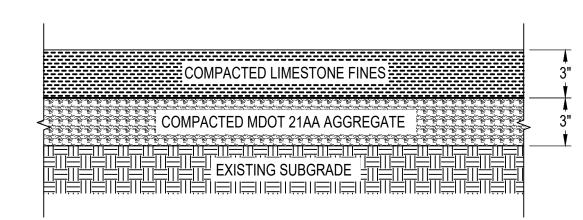
REMOVE TOP 1/3 OF BURLAP OR ENTIRE RAP IF NON-BIODEGRADEABLE.

SCARIFY BOTTOM AND SIDEWALLS OF PLANTING PIT.

PLANTING MIXTURE

6" EARTH PEDESTAL OF UNDISTURBED OR COMPACTED SOIL.

3 SLOPE TREE PLANTING 21 NOT TO SCALE



GRAVEL ACCESS PATH

21 NOT TO SCALE

200 Commonwealth Boulevard, Suite 300 Ann Arbor, Michigan 48105 Phone: 734.769.3004 Fax: 734.769.31664



ROUGE RIVER AOC JOHNSON CREEK FISH HATCHERY PARK HABITAT RESTORATION PROJECT

ALLIANCE OF ROUGE COMMUNITIES

NORTHVILLE, WAYNE COUNTY, **MICHIGAN**

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180611 ECT PROJECT NUMBER

SRD JOM
DRAWN BY APPROVED BY

SHEET TITLE

DETAILS -**REVEGETATION**

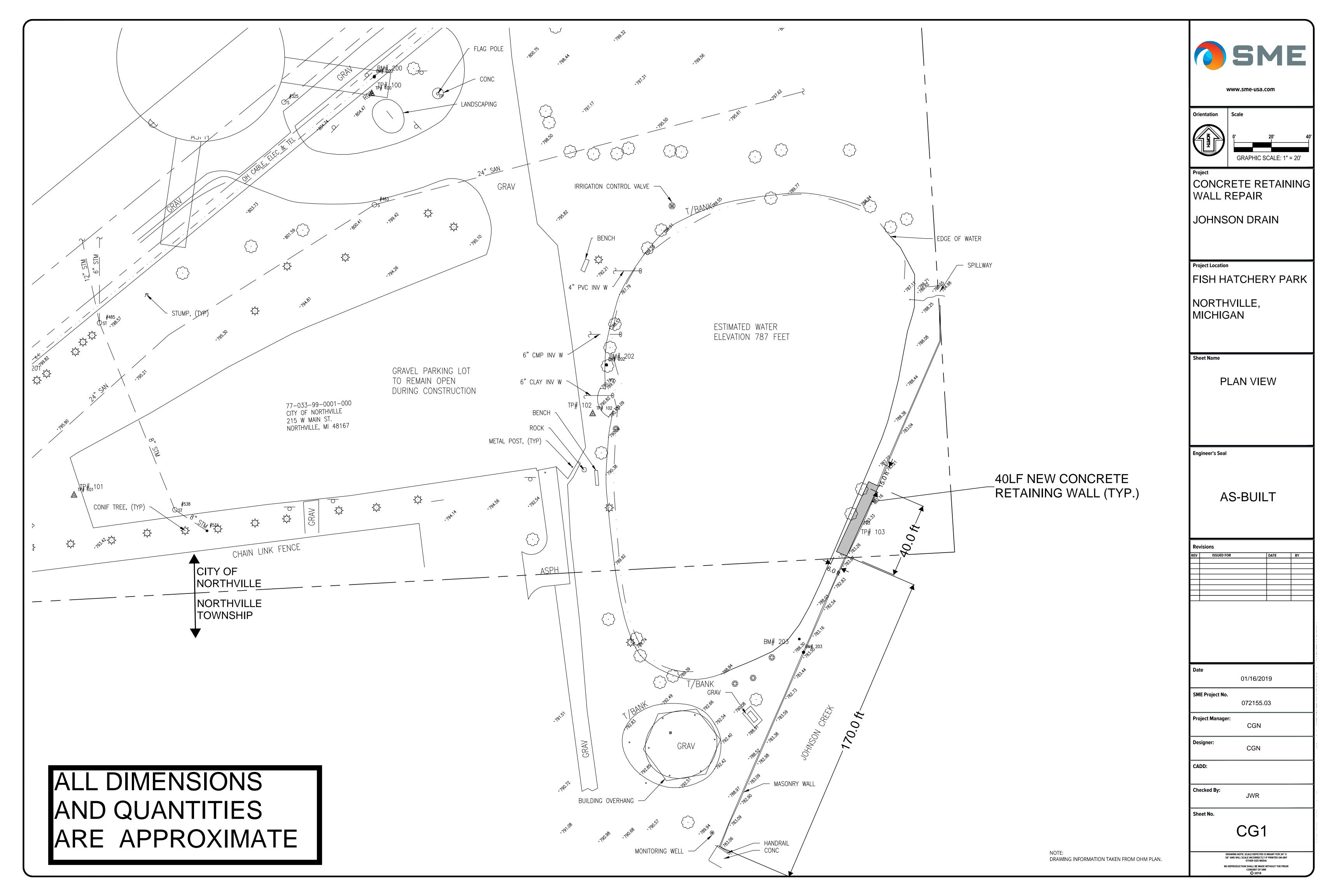
SCALE: VARIES

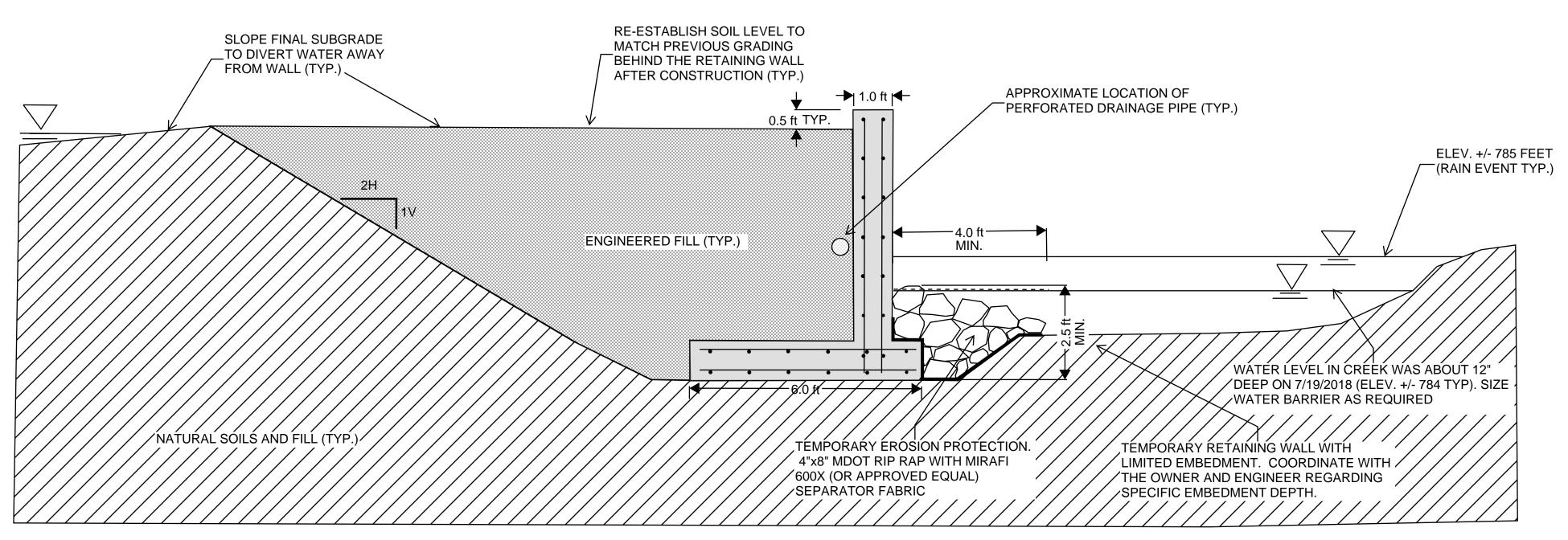
JOB BENCHMARK #200 FOUND RR SPIKE IN S SIDE OF WOOD LT POLE S OF FAIRBROOK ST 25' NE OF PARK SIGN, 45' NW OF FP JOB BENCHMARK #201 SET SPINDLE IN S SIDE OF WOOD

LP S SIDE OF FAIRBROOK ST 60'
N OF W END OF GRAVEL LOT ARCHITECTS ENGINEERS PLANNERS JOB BENCHMARK #202 SET SPINDLE IN W SIDE OF 24" TREE

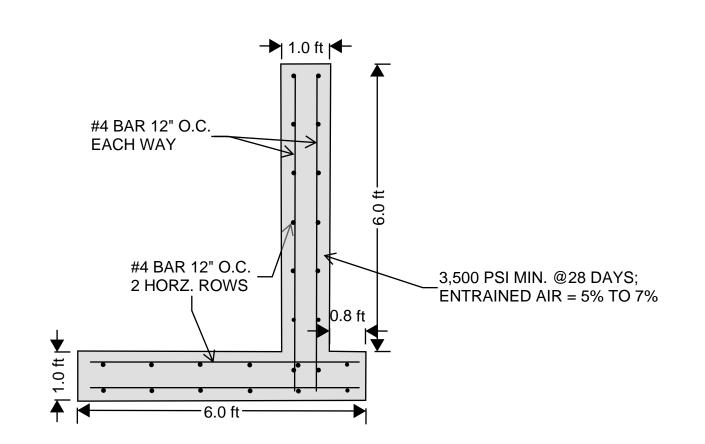
18' E OF GRAVEL LOT 60' N OF S

EDGE OF GRAVEL LOT 34000 Plymouth Road #325 SANITARY MANHOLE T/CAST 805.20 BOLTED ON Livonia, MI 48150 P (734) 522-6711 | F (734) 522-6427 #463 SANITARY MANHOLE T/CAST 801.74 24" CLAY INV E 779.84 24" CLAY INV SW 779.84 FLOWS EAST JOB BENCHMARK #203 SET "T" ON CONCRETE WALL, E SIDE SIGN REGULATORY(2) OHM-ADVISORS.COM OF POND 135' N OF CONC BRIDGE ELEV 788.23 #485 STORM MANHOLE T/CAST 798.75 6" INV N 793.25 12" INV N 792.65 12" CONC INV S 790.85 TRAVERSE POINT #100 N 338120.00 E 13359131.26 ELEV 804.31 48-005-99-0006-000 CITY OF NORTHVILLE 215 W MAIN ST. NORTHVILLE, MI-48167 #504 SANITARY MANHOLE T/CAST 797.67 24" CLAY INV S 781.17 24" CLAY INV E 780.97 TRAVERSE POINT #101 N 337904.89 E 13358971.75 ELEV 794.65 #531 YARD DRAIN T/CAST 792.72 8" CLAY INV W 788.62 TRAVERSE POINT #102 N 337948.53 #538 STORM MANHOLE T/CAST 794.59 8" CLAY INV NW 786.79 E 13359249.58 ELEV 791.37 SIGN_REGULATORY TRAVERSE POINT #103 N 337887.02 E 13359387.70 ELEV 787.89 SIGN REGULATOR LANDSCAPING - ŞIGN BILLBOARD SIGN REGULATORY IRRIGATION CONTROL VALVE -1 EDGE OF WATER GUY WIRE AMCHOR, (TYP) 6" CMP INV W - MASONRY WALL 6" CLAY INV W 77-033-99-0001-000 CITY OF NORTHVILLE 215 W MAIN ST. NORTHVILLE, MI 48167 REHABILITATE APPROX. 315 FEET OF EXISTING POURED CONCRETE RETAINING WALL - DESIGN CURRENTLY IN PROGRESS BY SME SIGN REGULATORY(2) SIGN REGULATORY -__ SIGN REGULATORY SIGN REGULATORY 48-005-99-0002-000 77-033-99-0002-000 NORTHVILLE PARKS & RECREATION FISH HATCHERY PARK - SITE PLAN Know what's below.
Call before you dig. OF 1

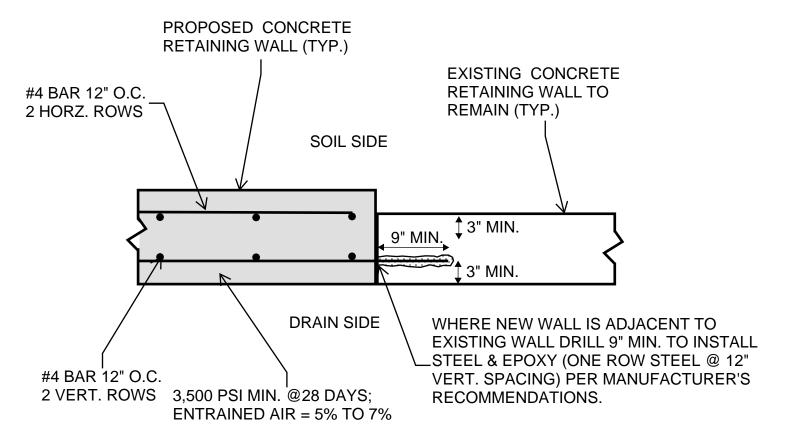




SECTION 1: NEW WALL - AFTER CONSTRUCTION



DETAIL 1: PROPOSED WALL
STEEL REINFORCEMENT



DETAIL 2: PROPOSED WALL AND EXISTING WALL CONNECTION

ALL DIMENSIONS
AND QUANTITIES
ARE APPROXIMATE

	SME
w	ww.sme-usa.com

Orientation Scale NTS

CONCRETE RETAINING
WALL REPAIR

JOHNSON DRAIN

Project Location

FISH HATCHERY PARK

NORTHVILLE, MICHIGAN

Sheet Nam

SECTIONS AND DETAILS

Engineer's Seal

AS-BUILT

EV	ISSUED FOR	DATE	BY
_			_
+			_
+			-

Date 01/16/2019

SME Project No.

072155.03

CGN

Project Manager:

Designer:

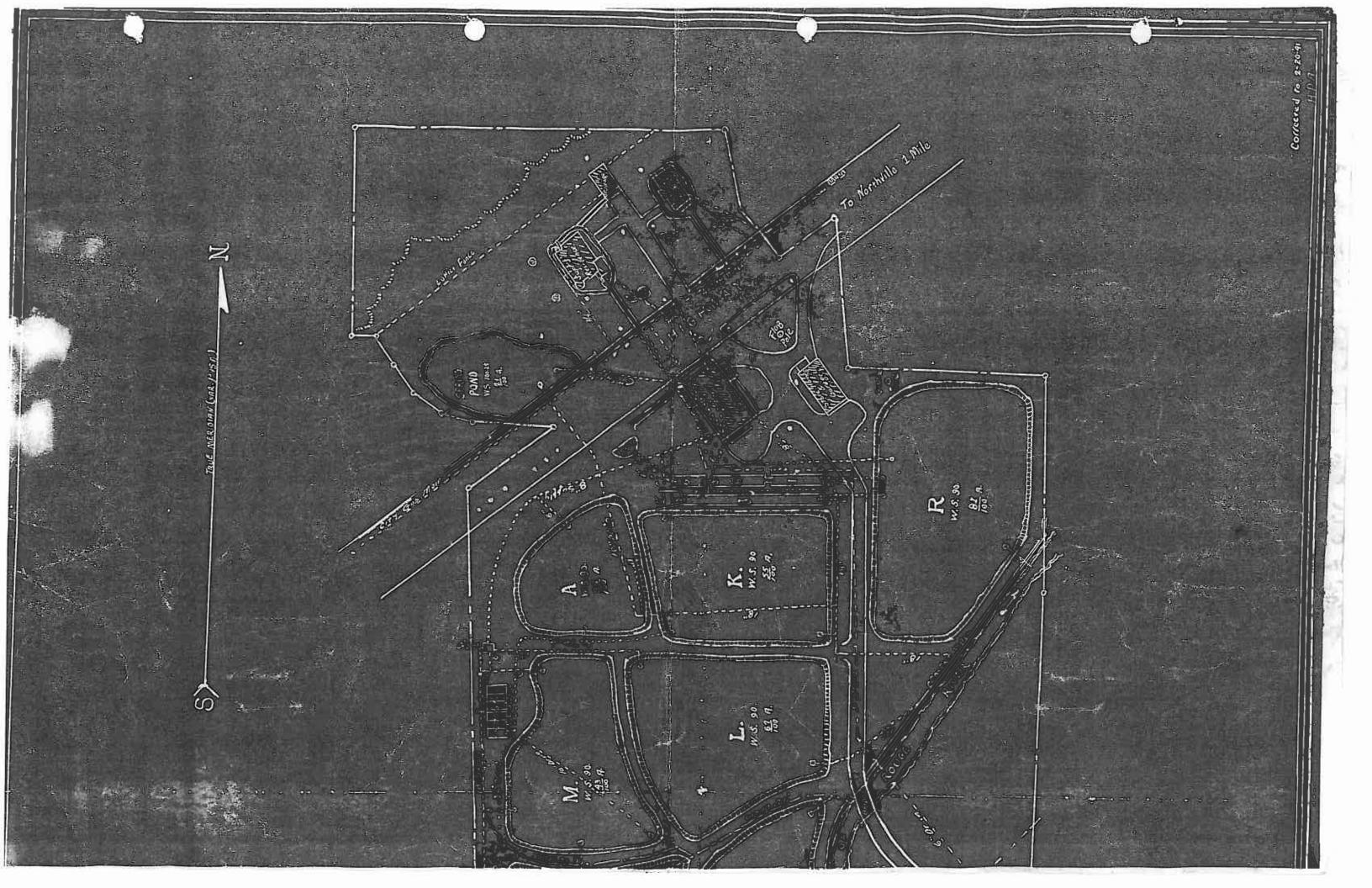
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Checked By:

Sheet No.

CG1.01

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 24" X 36" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR CONSENT OF SME



DEPARTMENTOR INTERIOR FISH AND WILDLIFE SERVICE

NORTHVILLE STATION MICHIGAN. 1941



APPENDIX M Bid Package – Tamarack Creek

ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT

CITY OF SOUTHFIELD OAKLAND COUNTY, MICHIGAN

CONTRACT DOCUMENTS
BIDDING DOCUMENTS
AND
SPECIFICATIONS

JANAURY 2021

CITY OF SOUTHFIELD & ALLIANCE OF ROUGE COMMUNTIES

Paid for by USEPA GLRI Grants GL-00E02344 & GL-00E2478

CITY OF SOUTHFIELD & ALLIANCE OF ROUGE COMMUNITIES ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT

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ADVERTISEMENT FOR BIDS

ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT

IN THE CITY OF SOUTHFIELD, MICHIGAN

BIDS DUE: February 23, 2021 AT 10:30 A.M., LOCAL TIME

The City of Southfield & the Alliance of Rouge Communities (ARC) will receive bids up **10:30 a.m.**, Local Time on **February 23, 2021**, for the *Rouge River AOC- Tamarack Creek Stream* and *Wetland Restoration Project* requiring the following work:

- 1. Removal of existing culverts, fencing, road crossing, drain tile, and bridge abutments
- 2. Excavation and grading to realign Tamarack Creek
- 3. Installation of floodplain benches including streambank stabilization measures
- 4. Basin and wetland improvements
- 5. Revegetation of disturbed areas with trees, shrubs, live stakes, and seeding
- 6. Site restoration

The Drawings and Specifications under which work is to be done may be obtained from the Michigan Intergovernmental Trade Network (MITN). Bids must be electronically uploaded to the MITN (www.mitn.info) website by the due date and time listed in this advertisement. Allow yourself some time to go through the uploading process. It is preferred that only one file be uploaded, in PDF, with a size limitation of 20 MB. For assistance on how to upload, contact MITN directly at (800) 835-4603. The MITN system will not allow for late submittals and a submittal must be completed before the due date and time. This responsibility rests entirely with the Respondent, regardless of delays resulting from the uploading process.

The implementation of this project is funded by an Environmental Protection Agency (EPA) Great Lakes Restoration Initiative (GLRI) Grant, GL-00E02478. The Contractor shall comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises contained in 40 CFR, Part 33. **The Minority (MBE) contractor's participation grant requirement is 10% and the Women (WBE) contractor's participation grant requirement is 7.5%.** Bidders must follow, document, and maintain documentation of the Good Faith Efforts, to ensure that Disadvantage Business Enterprises (DBE) have the opportunity to participate in the project by increasing awareness of procurement efforts and outreach as instructed in the grant award attached.

The proposed work is within a river system and floodplain. In preparation of a bid, the contractor must understand that the water level fluctuates frequently. The contractor shall understand and acknowledge that they have taken into account the potential for any water level changes that might occur in costing and performing the contract work. The contractor shall acknowledge that any fluctuation in water levels during/over the course of the project will most likely happen and will not constitute a change in conditions or an unforeseen site condition.

A mandatory pre-bid meeting will be held on February 10, 2021, 10:00 am at the site. The meeting will start in the Parking Lot (east side) located at 20475 West 10 Mile Road (just west of the Lodge Freeway), City of Southfield 48076. After the pre-bid meeting, all questions must be submitted in writing to Purchasingdepart@cityofsouthfield.com and abailey@ectinc.com with 'Tamarack Creek' referenced in the subject title, no later than 1:30 pm on Friday, February 12, 2021. Reply will be issued via Addendum, if necessary.

Bids shall be submitted in accordance with, and upon, the original forms included in the

Contract Documents. No Bid shall be withdrawn for a period of 90 days after the actual date of opening thereof. A bid bond must be submitted with your bid response in an amount not less than five percent (5%) of the base bid amount. Your deposit must be a Michigan-licensed surety's bid bond. If a proposer fails to furnish a required deposit with his bid, his bid will not be read and will not receive further consideration.

Proposals submitted by Bidders who have been debarred, suspended, or made ineligible by any Federal agency will be rejected.

A description of the Bidder's qualifications shall be included in each bid. This shall include:

- Bidder's overall qualifications (1 page max);
- A description of the Bidder's experience, with 3 project examples that are similar or contain similar components to the proposed project (2 pages max); and
- A description of the Bidder's general planned approach for this project with tentative schedule (4 pages max + schedule).

Bidder's qualifications will be considered when selecting a contractor.

Each bidder agrees to waive any claim it has or may have against the Owner, the Engineer, the Interested Parties and their representative employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

The successful bidder will be required to furnish satisfactory Performance Bond, Labor and Material Bonds, and Maintenance Bond, each in the full amount of the contract. The successful bidder will enter an agreement with the project Owner, which is defined as the City of Southfield and the Alliance of Rouge Communities. The City of Southfield and the Alliance of Rouge Communities reserve the right to reject any or all bids, to waive irregularities and informalities therein, and to award the Contract as deemed to be in the best interest of the project.

INSTRUCTIONS TO BIDDER

The City of Southfield, Oakland County, Michigan, & the Alliance of Rouge Communities (ARC) will receive bids up to 10:30 a.m., Local Time on February 23, 2021, for the Rouge River AOC- Tamarack Creek Stream and Wetland Restoration Project. Bids must be electronically uploaded to the MITN (www.mitn.info) website by the due date and time. Allow yourself some time to go through the uploading process. It is preferred that only one file be uploaded, in PDF, with a size limitation of 20 MB. For assistance on how to upload, contact MITN directly at (800) 835-4603. The MITN system will not allow for late submittals and a submittal must be completed before the due date and time. This responsibility rests entirely with the Respondent, regardless of delays resulting from the uploading process.

SCOPE OF WORK

The work under this Contract includes the furnishing of all labor, materials, equipment and construction equipment necessary for performing the work described in the Advertisement, all complete and in accordance with the Drawings and Specifications.

DEFINITIONS

The following terms used in this Contract will be construed and defined as follows:

<u>"Owner"</u>	The governmental agency/organization for whom the work is being
	done, the City of Southfield and the Alliance of Rouge Communities.

<u>"Engineer"</u>	The City of Southfield and Alliance of Rouge Communities Engineer,
	acting personally or by any of its authorized agents, Environmental
	Consulting & Technology, Inc. and its affiliate ECT Engineering LLC.

"Interested Parties"	Nolan Ten Mile Road Development, LLC, Scripps Media Inc & WXYZ-	
	TV, Centrum Southfield, LLC, Michigan Department of Transportation,	
	and Ray Miller & Chanel Lewis-Miller their agents, employees and	

officers.

"Contractor" The person(s) or firm contracting to perform the work.

"Subcontractor" The person(s) or firm employed by the Contractor to furnish materials

or service whether or not he employs labor at the site of the work.

<u>"Work"</u> All labor, materials, equipment, transportation, construction equipment

and other facilities necessary to be done or furnished by the Contractor

to complete the Contract.

"Written Notice" shall be deemed to have been "duly served" when such notice shall have been given or mailed to the Contractor or his superintendent at the site of the work or the address set forth herein or when such notice shall have been given or mailed to the Owner, at the address set forth herein.

CONTRACT DOCUMENTS

It is understood and agreed that the Advertisement, Instructions to Bidder, Proposal, Agreement, Bonds, Specifications, Drawings, Addenda and Change Orders issued by the Owner or the Engineer, and specifications and engineering data furnished by the Contractor and approved by the Engineer, are each included in this Contract and the work shall be done in accordance therewith.

SUBSURFACE CONDITIONS

If borings have been made, locations thereof are shown on the Drawings, and reports/logs thereof are in an Appendix to the Specifications. This information is offered to the bidder as evidence and the bidder himself shall assume the entire responsibility for any conclusions which he may draw from it. The Owner and/or Engineer does not guarantee, however, that the ground encountered during

construction will conform with these borings and the bidders should secure such other information as they consider necessary to check and supplement the above data.

Attention is called to the fact that groundwater may be encountered in a portion of the work. Bidders should examine the level of groundwater shown and the contract provisions relating to dewatering. No additional compensation shall be payable if dewatering is required.

CONSTRUCTION CONDITIONS

It is required that each bidder will examine the Contract Documents for this work and make a personal examination of the site of the proposed work and its surroundings. It is also expected that each bidder will obtain first-hand information concerning the available facilities for receiving, transporting, handling and storing construction equipment and materials and concerning other local conditions that may affect his work.

ACKNOWLEDGEMENT OF RIVER SYSTEM AND FLOODPLAIN

The Bidder understands and acknowledges that the performance of the work is required to be performed within a river system and floodplain. The Bidder further acknowledges that it is an active flowing river and the floodplain area may, from time to time, become wet and/or underwater during the performance of the work. They have taken into account the potential for any water level changes that might occur in costing and performing the contract work. The Bidder shall acknowledge that any fluctuation in water any fluctuation in water levels, flooding, or inundation during/over the course of the project will likely happen and will not constitute a change in conditions or an unforeseen site condition.

EXPERIENCE AND FINANCIAL STATEMENT

It is the intention of the Owner to award this contract to a bidder competent to perform and complete all work in a satisfactory manner. It is required by the Owner that each bidder under consideration shall submit a statement of his experience and financial status within seven (7) days when requested by the Engineer. The Engineer may request this information from the bidders under consideration immediately following the opening of bids. Each bidder shall be prepared to submit to the Engineer the following notarized statements pertaining to his financial resources, adequacy of plant and equipment, organization, prior experience and other facts, as his qualification to enter into contract with and to perform construction work for the Owner.

- 1. <u>Organization</u>: State legal title of organization, business address, and if a corporation, where incorporated. Give names of principal officers and capitalization, number of and positions held by supervisory employees and number of employees regularly employed.
- 2. <u>Financial Resources</u>: Furnish complete financial statement for each of two (2) successive recent periods.
- 3. **Equipment Owned**: Give manufacturer's name, description, size and/or capacity and age of each piece or article of major equipment.
- 4. **Experience Record**: Give names of parties and dates for which work has been done, general description of work and contract price of work performed.

NAME, ADDRESS AND LEGAL STATUS OF BIDDER

The name and legal status of the bidder, that is, as a corporation, partnership, or an individual, shall be stated in the Proposal. A corporation bidder shall name the state in which its articles of incorporation are held and must give the title of the official having authority, under the by-laws, to sign contracts. A partnership bidder shall give the full names and address of all partners.

Anyone signing a Proposal as an agent of another or others must submit with his Proposal legal evidence of his authority to do so. The place of residence of the bidder, or the office address in the case of a firm or company, with county and state, must be given after his signature.

BID DEPOSITS

Each Proposal must be accompanied by a bid deposit for a sum not less than five percent (5%) of the Proposal. Bid deposits must be a Michigan-licensed surety's bid bond. If a proposer fails to furnish a required deposit with his bid, his bid will not be read and will not receive further consideration.

FORM OF PROPOSAL

All Proposals must be made and signed by the bidder in the form attached hereto.

All prices stated in the Proposal must be legible. Illegibility of any work and/or figure in the Proposal may be sufficient cause for rejection of the Proposal by the Owner. All spaces shall be filled in on the Proposal form.

Supplemental statements by the Contractor written into the Proposal form or by letter modifying the terms of the base Proposal will be considered as irregular and may make the Proposal subject to rejection by the Owner.

Each Proposal must be uploaded to the MITN (www.mitn.info) website by the due date and time. Allow yourself some time to go through the uploading process. It is preferred that only one file be uploaded, in PDF, with a size limitation of 20 MB. For assistance on how to upload, contact MITN directly at (800) 835-4603. The MITN system will not allow for late submittals and a submittal must be completed before the due date and time. This responsibility rests entirely with the Respondent, regardless of delays resulting from the uploading process.

BASIS OF PROPOSAL

Proposals are solicited on the basis of unit prices for certain items of work and lump sum prices for certain items of work, all as provided in the Proposal form.

The preliminary estimates of quantities indicated, although given with as much accuracy as is practicable, are to be regarded as approximate only, being given for the general guidance of the bidders as a basis upon which the different Proposals may be compared. The Owner reserves the right to increase or diminish any or all of these quantities within reasonable limits and the Contractor shall be paid for the actual amount of work completed by him and accepted by the Owner at the prices stated in his proposal.

PROPOSAL DATA

Where equipment manufacturers are required to be listed, the bidders must bid on equipment from the list of suggested manufacturers contained in the Specifications.

Other makes of equipment or materials from those listed in the Specifications shall be bid using the Proposal page entitled "Alternates to the Base Proposal", stating the separate and respective amounts that will be deducted from, or added to, contract amount if alternates are accepted at time of award.

PRE-BID MEETING

A mandatory pre-bid meeting will be held on February 10, 2021 am at the site. The meeting will start in the Parking Lot (east side) located at 20475 West 10 Mile Road (just west of the Lodge Freeway), City of Southfield 48076.

INTERPRETATION OF CONTRACT DOCUMENTS

Neither the Owner nor Engineer will give verbal answers to any inquiries regarding the meaning of Drawings and Specifications, or verbal instructions prior to the award of the Contract. Any verbal statement regarding same by any persons, prior to award, shall be unauthoritative.

explanation desired bidders Any by must be requested to via email to purchasingdepart@cityofsouthfield.com Engineer's Representative, Alice and the Bailey, <u>abailey@ectinc.com</u> no later than 1:30 pm on Friday, February 12, 2021 with 'Tamarack Creek' referenced in the subject title is preferred. If an explanation is necessary, a reply will be made in the form of an Addendum to all in attendance at the pre-bid meeting.

All Addenda issued to bidders prior to date of receipt of bids shall become a part of the Contract Documents and all bids are to include the work therein described. Each Proposal submitted shall list all Addenda by numbers which have been received prior to time scheduled for receipt of bids.

BONDS AND INSURANCE

The successful bidder will be required to execute three bonds with sureties acceptable to the Owner; the **Performance Bond** to be executed to the Owner, to be in the amount of one hundred percent (100%) of the full Contract price and to be conditioned for the faithful fulfillment of the Contract and to include the protection of the Owner from all liens and damages arising out of the work; the **Labor and Material Bond** to be executed to the people of the state, to be in the amount of one hundred percent (100%) of the full Contract price and to be conditioned for the payment of all labor and materials used in the work and for the protection of the Owner from all liens and damages arising therefrom; and the **Maintenance and Guarantee Bond**, to be in the amount of one hundred percent (100%) of the Contract price.

The Worker's Compensation Insurance, Public Liability and Property Damage Insurance and Owner's Protective Public Liability Insurance in the amounts specified in the Agreement must be carried by the Contractor.

Each Proposal shall include the premium and all other charges, if any, for the Bonds and Insurance herein described.

RIGHT TO ACCEPT, TO REJECT AND TO WAIVE DEFECTS

The Owner reserves the right to accept any Proposal, to reject any or all Proposals, and to waive defects or irregularities in any Proposal. In particular, any alteration, erasure or interlineation of the contract documents and of the form of Proposal shall render the accompanying Proposal irregular and subject to rejection by the Owner unless initialed by the signatory prior to receipt of the Proposal.

WITHDRAWAL OF BIDS

Any bidder who has submitted a Proposal to the Owner may withdraw his bid at any time prior to the scheduled time for the receipt of bids. No bidder may withdraw his bid after the time stated in the Advertisement for receiving bids, and his bid shall be firm and shall remain firm for a period of ninety (90) days thereafter.

TAXES

The Contractor shall pay all use and other taxes that are lawfully assessed against the Contractor in connection with the work included in this Contract.

AWARD AND EXECUTION OF CONTRACT

Contract shall be awarded to the lowest responsive and responsible bidder on the basis of the lowest total sum of the extended unit prices for items of work included in the Proposal. The contract shall be deemed as having been awarded when formal notice of award shall have been duly served by the Owner upon the bidder.

TIME OF COMPLETION

The Owner and the individual citizens of the municipality affected by this project are vitally concerned with the prompt completion of the construction together with the cleanup and restoration of roads, medians and lawns within the time allowed in the proposal.

The Contractor shall use sufficient labor and equipment to complete and place in service all of the work being constructed within this contract within the time specified in the proposal. The surface cleanup shall follow closely behind construction with earth spoil removed from lawns and roads and any trenches neatly finished by the end of each work day. Failure of the contractor to comply with this type of workmanlike job will result in the suspension of all contract operations until the cleanup is effected.

If the Contractor shall be unavoidably delayed in beginning or fulfilling this contract by reason of by acts of Providence, or by general strikes, or by court injunction, or by stopping of the work by Owner because of any emergency or public necessity or by reason of alterations ordered by Owner, the Contractor shall have no valid claim for damages on account of any cause of delay; but he shall in such case be entitled to such an extension of the above time limit herein, as the Engineer shall adjudge to be just and reasonable; provided, however, that formal claim for such extension shall be made in writing by the Contractor within a week after the date upon which such alleged cause or delay shall have occurred.

Each bidder shall enter, the number of calendar days they will require for achieving substantial completion of the project upon receiving the Notice to Proceed. At a minimum substantial completion of this Contract will be achieved no later than **November 15, 2021.** Substantial Completion shall be defined as all project work activities, with the exception of Live Stake Installation, Site Restoration, Asbuilt Survey and Drawings, Continuation of Vegetation Maintenance, Vegetation Warranty, guarantees and contract close out.

Intermediate Final completion of this Contract within 90 calendar days after substantial completion. Intermediate Final Completion shall include Live Stake Installation, Site Restoration, As-Built Survey and Drawings, and close out documents. Vegetation Maintenance and warranty shall extend beyond this period in order to fulfill the Contract requirements.

Final contract completion no later than November 15, 2022.

LIQUIDATED DAMAGES

It is expressly covenanted and agreed that time is and shall be considered of the essence of the Contract. In the event that the Contractor shall fail to perform the entire work agreed to by or at the times herein mentioned in Article II of The Agreement, or within some other certain date subsequent to this to which the time limit for the completion of the work may have been advanced under the provisions of Article II of The Agreement, the Contractor shall pay unto the Owner as and for liquidated damages and not as a penalty, the sum of **Five Hundred Dollars (\$500.00)** for each and every calendar day that the Contractor shall be in default. Said sum of **Five Hundred Dollars (\$500.00)** per day, in view of the difficulty of estimating such damages with exactness, is hereby expressly fixed and agreed upon as the damages which will be suffered by the Owner for reason of such defaults. It is also understood and agreed that the liquidated damages herein before mentioned are, in lieu of the actual damages arising from such breaches of this Contract, which said sums the Owner shall have the right to deduct from any monies in hand otherwise due or to become due to the Contractor or to sue for and recover compensation for damages for nonperformance of this contract at the time stipulated herein and provided.

EXECUTION OF CONTRACT AND BOND FORMS

The bidder to whom the contract shall have been awarded will be required to execute the Contract in the form attached hereto and to furnish surety and insurance certificates all as required within **ten (10)** calendar days from the date when notice of award is delivered to the bidder. The notice of award shall be accompanied by the necessary contract and bond forms as required by the General Supplementary Conditions. The notice to proceed shall be issued following the execution of the Contract by the Owner.

SOIL EROSION AND SEDIMENTATION CONTROL

The Contractor shall make himself thoroughly familiar with the requirements of the Specifications in connection with prevention of soil erosion and sedimentation. The Contractor will be responsible for erosion control during the life of the Contract.

The cost of such control will be incidental to the work under this contract and costs will be included in applicable unit price items listed in the Proposal.

The Contractor shall designate a person who shall be responsible for soil erosion and sedimentation control during the life of the contract.

TRAFFIC CONTROL/MAINTAINING TRAFFIC

The Contractor shall be responsible for traffic control during the life of the contract as required by the Specifications or as directed by the Engineer. The cost for Traffic Control/Maintaining Traffic shall be included in the Lump Sum item listed in the Proposal. If no Lump Sum item is listed in the Proposal the cost for Traffic Control/Maintaining Traffic shall be considered incidental to the work done under the contract.

PROGRESS PAYMENTS

Progress payments to the Contractor will be made in accordance with State Act 524, Public Acts of 1980, a copy of which is included in these documents.

NON-COLLUSION AFFIDAVIT

Bidders do not need to have the Non-Collusion Affidavit notarized but it must be submitted in order for a bid to be declared responsive.

SUPPLEMENTAL INSTRUCTIONS TO BIDDER

<u>DOCUMENT DISTRIBUTION:</u> The City of Southfield, Michigan officially distributes bid documents from the Purchasing Department or through the **Michigan Intergovernmental Trade Network (MITN) at www.mitn.info.** The City of Southfield cannot guarantee the accuracy and is not responsible for any errors contained in any information received from alternate sources.

RECEIPT OF BIDS: In order for a bid to receive consideration, it must be received prior to the specified time of opening as indicated on the bid form. No bid will be accepted after the time specified for the bid opening. The City reserves the right to postpone the bid opening for its own convenience. Proposers should use the bid documents furnished; failure to do so will be considered as an alternate offer and may be cause for rejection. Proposers must be electronically uploaded to the MITN (www.mitn.info) website by the due date and time. Allow yourself some time to go through the uploading process. It is preferred that only one file be uploaded, in PDF, with a size limitation of 20 MB. For assistance on how to upload, contact MITN directly at (800) 835-4603. The MITN system will not allow for late submittals and a submittal must be completed before the due date and time. This responsibility rests entirely with the Respondent, regardless of delays resulting from the uploading process.

<u>DEPOSITS</u>: If a deposit is required, it must be a company certified check or bank cashier's check or bank money order (payable to Treasurer of the City of Southfield) or cash or a Michigan-licensed surety's bid bond. Should a bidder fail to furnish the required deposit with his bid, the bid will not be read and will not receive further consideration by the Owner.

<u>ADDITIONAL BIDS - QUANTITY INCREASE</u>: If a slight increase in quantity results in a reduction of bid item unit cost, an additional bid on that basis may be submitted. Such additional bids must be made separately from the original bid and are subject to the same terms and conditions of the original bid.

<u>ADDITIONAL BIDS - ALTERNATIVE PRODUCTS</u>: If a bidder has more than one product meeting the specifications, he is privileged to offer additional bids. Such additional bids must be made separately from the original bid and are subject to the same terms and conditions of the original bid. <u>Product brand names</u>, if used herein, are intended to describe quality rather than preference.

<u>WITHDRAWAL</u>: No bid shall be withdrawn for <u>90 days following the bid opening date</u>. A Bidder may reduce this period if he so states in his proposal; however, the Owner reserves the right to declare such a bid non-responsive to the specifications.

RIGHT TO REJECT: The Owner reserves the right to waive any and all irregularities in the bids, to split the award by items or lots (unless otherwise stipulated in the specifications) or to award to other than the low bidder, should any of the foregoing be deemed in its best interests.

<u>CHANGE IN SPECIFICATIONS</u>: If a bidder wishes to request a revision in the specifications or an interpretation of the specifications, the request may receive consideration if presented to the Owner sufficiently in advance of the bid opening date. If a change in specifications is then made, the Owner will notify all bidders by registered mail and shall postpone the bid opening date, if necessary.

SURETIES: An approved surety bond to the Owner in an amount deemed adequate by the Owner may be required to guarantee performance. In certain cases described by state law, Act No. 213 of 1963, an additional bond to the State of Michigan is mandatory.

REVIEW OF CONTRACTUAL TERMS: If this solicitation shall result in a contractual document, the vendors must review and indicate potential changes or objections to the attached contractual terms in writing with your bid response for consideration. Changes requested after submission may result in rejection of your response.

FAILURE TO ENTER INTO CONTRACT: If a bidder fails to formally acknowledge, accept, and execute the contract within **ten (10) calendar days** after delivery of the notice of award, the bid deposit shall be forfeited to the Owner.

<u>DEFAULT</u>: In the event of the Contractor's failure to deliver or perform in accordance with the contract, the Owner may consider the Contractor in default and take certain steps to protect its interests. The Owner may, without impairing its other rights and benefits, purchase all or part of the contract goods or services on the open market and charge all additional costs to the Contractor or his surety.

DELIVERY: F.O.B. City of Southfield, Michigan, designated location, freight prepaid.

<u>CONTAINER</u>: Packing, reels, etc., if chargeable, must be shown as separate items. Return freight must be paid by Contractor. Bids incorporating charge for returnable containers, etc., will be considered an agreement to reimburse the Owner by check immediately on their return, regardless of other outstanding charges against the Owner, unless the charge is carried on a memo billing by the seller.

<u>WORKMANSHIP</u>: All materials furnished must be new, or latest model and standard first grade quality, of best workmanship and design, unless otherwise expressly specified. Contractor shall if required, furnish satisfactory evidence of quality of materials. Offers of experimental or unproved equipment may not be considered.

INSPECTION: All costs arising from inspection, tests, and handling of materials failing to meet the specifications shall be the sole responsibility of the Contractor.

<u>PATENTS</u>: The Contractor shall protect and indemnify the Owner against all suits, costs, and damages which may result due to the use of any patented device, process, apparatus, material or invention during the performance of the work.

PRE-BID CONFERENCE: A mandatory pre-bid meeting will be held on February 10, 2021, 10:00 am at the site. The meeting will start in the Parking Lot (east side) located at 20475 West 10 Mile Road (just west of the Lodge Freeway), City of Southfield 48076. After the pre-bid meeting, questions may be submitted to the Engineer's Representative no later than 1:30 pm on Friday February 12, 2021. All questions must be in writing submitted via email to purchasingdepart@cityofsouthfield.com and abailey@ectinc.com with 'Tamarack Creek' referenced in the subject title is preferred. Reply will be issued via Addendum, if necessary.

NON-COLLUSION CLAUSE: In signing and submitting this proposal, the bidder states that his bid is genuine and not collusive or a sham; such bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person, to put in a sham bid, or that such other person shall refrain from bidding and has not in any manner, directly or indirectly, colluded, conspired, connived, or agreed, with any person, to fix the bid price of affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price.

INSURANCE: Proof of Insurance Coverage: The Contractor shall provide The City of Southfield, at the time that the contracts are returned by him/her for execution, a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable. Copies or certified copies of all policies mentioned above shall be furnished, if so requested.

NON-DISCRIMINATION CLAUSE: By signing and submitting this bid for consideration of an award by the City of Southfield, the contractor and any subcontractor covenants not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment or a matter directly or indirectly related to employment, because of race, color, religion,

national origin, age, sex, height, weight, marital status, physical or mental disability, family status, sexual orientation, or gender identity that is unrelated to the individual's ability to perform the duties of a particular job or position. Breach of this covenant may be regarded as a material breach of the contract.

NON-IRAN LINKED BUSINESS: By signing the Authorization & Acceptance of Specifications below, I certify and agree on behalf of myself and the company submitting this bid the following: (1) that I am duly authorized to legally bind the company submitting this bid; and (2) that the company submitting this bid is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting the bid will immediately comply with any further certifications or information submissions requested by the City in this regard.

CONFLICT OF INTEREST: The Firm shall not be allowed to work as a contractor, sub-contractor or partner on any project within the scope of this contract which constitutes a conflict of interest. In order to determine if your company presents any potential conflict of interest with respect to the award of the subject contract, on a separate piece of paper, please disclose any familial or business relationships you have with any current or former employee, agent, consultant, officer or elected or appointed official of the City of Southfield or others who are or have been within the past year, in a decision making position with the City of Southfield, and who may be able to grant favorable treatment with respect to being awarded this contract. Please disclose the full nature and extent of your relationship. Violation of the City's Code of Ethics as the result of non-disclosure will be reviewed in accordance with the City of Southfield's Code of Ethics and may result in disciplinary action, and/or termination of the subject contract.

COMMUNICATION DURING THE PROCUREMENT PROCESS: During the solicitation process, which includes but is not limited to, the solicitation period and subsequent evaluation process, respondents may not make any contact regarding this request with Council members, City Administration, the Legal Advisor, Elected Officials or City of Southfield staff other than the staff member designated as the point of contact. All questions should be addressed to the Purchasing Department, in writing via the email address supplied in the bid documents or during the pre-bid meeting if applicable.

EVALUATION COMMITTEE: The activities of an evaluation committee are confidential and any contact with members will create the impression of unfair access or conflict of interest. Contact prior to selection may lead to a nullification of the results of this solicitation, or a dismissal of the offending respondent's submission, or it may result in the contacted party being required to recuse himself or herself from consideration of the respondent's submission.

FEDERAL FUDING PROVISIONS: The contract resulting from this IFB is subject to compliance with all applicable federal, state and local laws.

Supplemental Specification: City of Southfield Living Wage Ordinance

The Contractor shall comply with the terms of the City of Southfield "Living Wage Ordinance", Chapter 14 of Title I, of the Code of the City of Southfield (the "Ordinance").

The Contractor shall pay its "covered employees" (a person employed full-time to perform services in connection with the Contractor's contract(s) with the City, including related subcontracts) and at least 90% of all the employees working on behalf of the Contractor in connection with a contract with the City, no less than a "Living Wage".

A "Living Wage" means an hourly rate which, on an annual basis (based on forty hours per week, fifty weeks per year) is equivalent to either of the following:

- a) One Hundred Twenty-Five percent (125%) of the federal poverty guideline, or
- b) One Hundred percent (100%) of the federal poverty guideline if Health Care Benefits are provided to the covered employee ("Health Care Benefits" means comprehensive, medical coverage for the covered employee fully paid for by the Contractor, whether provided on an insured or self-funded basis. "Health Care Benefits" may include membership in a health maintenance organization (HMO) or similar entity, if the membership or subscription fee is fully paid by the Contractor).

The Contractor shall be required to certify both at the commencement of the Contract and upon request for final contract payment that it is in compliance with the requirements of the Living Wage Ordinance.

The Contractor shall post a notice of its obligation to comply with the Living Wage Ordinance in a conspicuous place in any work place where a covered employee is employed. The notice shall also state that if the Contractor has failed to pay a living wage to a covered employee, such employee may file a notice of non-compliance with the City of Southfield Purchasing Agent. The Purchasing Agent, based on such notice or, on his or her own initiative if a possible violation of the Ordinance is discovered by other means, shall forward a notice to the Contractor by first class mail describing the violation, requesting the submission of proof of compliance within thirty (30) days of mailing. Failure by the Contractor to submit proof of compliance within such thirty (30) day period shall result in termination of the Contract.

In addition, a violation of the Ordinance is a civil infraction, punishable by a fine of not more than \$500.00 plus all costs of the action. The Court may issue and enforce any judgment, writ, or order necessary to enforce the Ordinance, including payment to the affected covered employee or employees of the difference between wages actually paid and the living wage that should have been paid, plus interest, and other relief deemed appropriate.

The Contractor shall not reduce the compensation, wages, fringe benefits, or leaves available to

Supplemental Specification: City of Southfield Living Wage Ordinance

any covered employee or other employee in order to pay the living wage required by the Ordinance.

The following exemptions from compliance with the Ordinance shall apply:

- 1. The provisions of the Ordinance shall not apply to a contract with another unit of government.
- 2. The provisions of the Ordinance shall not apply to a covered employee who is:
 - (a) younger than (18) years of age;
 - (b) employed during summer months in a student or youth employment program;
 - (c) engaged in any training program, not to exceed a time period of ninety (90) days, that qualifies the person either to begin employment with the covered employer or to receive an employment promotion within the covered employer; or
 - (d) engaged or participating in a bona fide, student internship program.
- 3. The provisions of the Ordinance shall not apply where a covered employee is subject to the terms of a collective bargaining agreement.
- 4. The provisions of the Ordinance shall not apply where federal or state law requires the payment of a prevailing wage.
- 5. A non-profit covered employer, which is recognized by the Internal Revenue Service as tax exempt under the Internal Revenue Code, shall be exempt from the provisions of the Ordinance, provided that this exemption shall only apply to non-profit, covered employer if it employs ten (10) or fewer employees on a continuous basis. A continuous basis is defined as employing ten (10) or fewer employees on each working day in each twenty (20) or more calendar weeks in the current or preceding year.
- 6. The provisions of the Ordinance shall not apply to contracts entered into prior to the effective date of this Chapter.

2021 Applicable Living Wage Rates

For employees <u>not</u> covered under health care benefits \$16.56/hour

For employees covered under health care benefits \$13.25/hour

CITY OF SOUTHFIELD & ALLIANCE OF ROUGE COMMUNITIES SUPPLEMENTAL BID SHEET ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT

The undersigned, having familiarized himself with the local conditions affecting the cost of the work and with the Contract Documents for the designated project, hereby proposes to perform all work and furnish all labor, tools, equipment, and materials, including utility and transportation services, necessary to perform and complete in a workmanlike manner the construction itemized below in the City of Southfield, all in accordance with the Drawings, Specifications and other Contract Documents at the unit prices hereinafter set forth. State or federal funds are being used to assist in construction and relevant State or federal requirements will apply. The contractor and any subcontractors not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or a disability that is unrelated to the individual's ability to perform the duties of a particular job or position. There is a Minority (MBE) contractor's participation grant goal of 10% and a Women (WBE) contractor's participation grant goal of 7.5%.

Item	Description	Unit	Qty	Unit Price	Item Cost
No.					
1	Mobilization	LS	1		
2	Audio Visual Recording	LS	1		
3	Construction Staking/Surveying	LS	1		
4	Traffic Control	LS	1		
5	Soil Erosion and Sedimentation Control	LS	1		
6	Staging and Access	LS	1		
7	Temporary At-Grade Stream Crossing	LS	1		
8	Tributary Culvert	LS	1		
9	Water Control	LS	1		
10	Tree Removal 6-12"	EA	60		
11	Tree Removal >12"	EA	80		
12	Bat Habitat Felling (after April 1, 2021)	EA	50		
13	Clearing	AC	4.5		
14	Culvert Removal	LS	1		
15	Crossing Removal	LS	1		
16	Bridge Abutment Removal	LS	1		
17	Fence Removal	LF	600		
18	Basin Excavation - Remove from site	CY	4,100		
19	Phragmites/ Cattail Treatment	AC	2.0		
20	Floodplain Excavation- Remove from site	CY	8,500		
21	Floodplain Excavation- Use onsite	CY	3,000		
22	Basin Clean Fill	CY	4,100		
23	At-Grade Riffle	EA	2		
24	Whole Tree Revetment	LF	265		
25	Scour Pool Log	EA	5		
26	Woody Habitat	EA	3		
27	Staggered Wing Logs	EA	1		
28	Horizontal Log Sill	EA	1		

NAME OF BIDDER	SBS-1	AUTHORIZED SIGNATURE

Item	Description	Unit	Qty	Unit Price	Item Cost
No.	-				
29	Rootwad Revetment	EA	1		
30	Topsoil	CY	4000		
31	Wetland Basin- ECB S75BN	CY	11000		
32	Wetland Basin- Emergent Wetland Seed Mix	AC	2.5		
33	Floodplain Bench- ECB C700BN	SY	9500		
34	Floodplain Bench- Forested Wetland Seed Mix	AC	2.2		
35	Floodplain Slopes- ECB C700BN	SY	7000		
36	Floodplain Slopes- Mesic Woodland Seed Mix	AC	1.5		
37	Disturbed Upland- ECB S75BN	SY	5000		
38	Disturbed Upland- MDOT THM Mix	AC	1.0		
39	Live Stakes	EA	2,300		
40	Shrubs	EA	2000		
41	Trees	EA	500		
42	Fence Replacement	LF	600		
43	Site Restoration	LS	1		
44	As-Built Survey and Drawings	LS	1		
45	Vegetation Maintenance	MON	14		
46	Unforeseen Site Conditions	LS	1	\$200,000.00	\$200,000.00

	TOTAL BASE	RID - \$	·	(figures)
_		(words	s)	
ALTE	RNATES			
A-1	Alternate 1- Bat Habitat Felling (Before April 1, 2021)	EA	50	

If any addendums are issued for this job, Bidder shall note receipt in column below and insert each addendum in this book.

Addendum No. Date Received Received

The undersigned affirms that in making such Proposal neither he nor any company that he may represent, nor anyone on behalf of him or company, directly or indirectly, has entered into any combination, collusion, undertaking or agreement with any other bidder or bidders to maintain the prices of said work, or any contract to prevent any other bidder or bidders from bidding on said contract or work,

	_	
NAME OF BIDDER	SBS-2	AUTHORIZED SIGNATURE

and further affirms that such Proposal is made without regard or reference to any other bidder or Proposal and without any agreement or understanding or combination, either directly or indirectly, with any other person or persons with reference to such bidding in any way or manner whatsoever.

The undersigned hereby agrees that, if the foregoing Proposal shall be accepted by the Owner, he will, within **ten (10) consecutive calendar days** after receiving notice of the acceptance of such Proposal, enter into contract, in the appropriate form, to furnish the equipment necessary for the full and complete execution of the work at and for the price named in his Proposal, and he will furnish to the said Owner such surety, in the State of Michigan, for the faithful performance of such contract.

The undersigned hereby agrees that, if this foregoing Proposal shall be accepted by the said Owner, the date on which the entire work of this contract shall be completed will be set by **Substantial Completion** no later than November 15, 2021, Intermediate Final Completion of within 90 calendar days after substantial completion and final completion no later than November 15, 2022.

substantial completion and final completion	·
The bidder will achieve sustainable completion receiving the Notice to Proceed.	work of this Contract within calendar days of
understand and acknowledge that the perform stream and floodplain system. That it is an active to time, become wet and/or underwater durin accounted for the potential for any water level performing the contract work and acknowledge	going Proposal shall be accepted by the said Owner, they nance of the work is required to be performed within a ve flowing stream, and the floodplain area may, from time g the performance of the work. The undersigned has el changes that might occur in costing, scheduling and that any fluctuation in water levels, flooding, or inundation appen and will not constitute a change in conditions or an
case he shall fail to fulfill his obligations under may, at its option, determine that the unders Proposal and that the certified check or bidder' the said Owner; but otherwise, the said cert	(certified check/bidder's bond) in the sum of Instructions to Bidder and the undersigned agrees that, in the foregoing Proposal and Agreement, the said Owner signed has abandoned his rights and interests in such s bond accompanying his Proposal has been forfeited to tified check or bidder's bond shall be returned to the and the acceptance of his bonds or upon the rejection of
	deral Certification Regarding Debarment, Suspension and Nonsegregated Facilities; Qualifications Package; and
It is agreed that this bid may not be withdrawn for	or a period of ninety (90) days after the opening date.
	right is reserved by the Owner to reject any or all bids, to y defect or irregularity in any bid or to split award unless in the best interest of the Owner to do so.
Dated and signed at	, State of Michigan,
this, 20	
	Company Name
	Signature of Bidder
	Title

SBS-3

AUTHORIZED SIGNATURE

NAME OF BIDDER

	Business Address
	City, State, Zip Code
Seal if bid is by a Corporation.	Telephone Number/FAX Number

SBS-4

NAME OF BIDDER

AUTHORIZED SIGNATURE

HAZARD COMMUNICATION PROGRAM - CONTRACTOR'S POLICY STATEMENT

The City of Southfield complies with the Michigan Right to Know Law (MIOSHA). The City's written Hazard Communication Program is available upon request in the Office of Management and Budget as is our master Material Safety Data Sheets (MSDS) binder. The City Policy and master MSDS binder may be viewed at any time by both contractors and their employees performing work on City owned or operated premises.

NOTE: Time required by contractors (and their employees) to review the City Policy or Material Safety Data Sheets is **NOT** chargeable to the City of Southfield or Alliance of Rouge Communities.

In addition, the successful bidder must comply with Public Act 4111 Hazard Communications (Employee Right to Know) Act by providing material safety data sheets (MSDS) to the City of Southfield prior to commencing any work.

NAME OF BIDDER	AUTHORIZED SIGNATURE

LEGAL STATUS OF BIDDER

Α	corpora	ation	duly	organized	and	doing	busines	SS	unde	er the	laws	of	the	State	of
for	whom									, t	earing	the	offic	cial title	e of
				,whose	signa	ature is	affixed	to	this	Propos	al, is	duly	aut	horized	d to
ex	ecute co	ontrac	ts.												
Αļ	oartners	hip al	l of the	e members o	of whic	ch, with	address	es,	are:						
An	individu	ual, wl	hose s	signature is a	affixed	I to this	Proposa	l.							
(TI	ne RIDD	FR sl	hall fill	out the app	ropria	te form :	and strik	ല വ	ut the	other t	wo)				

THE AGREEMENT

	THIS	AGREE	MENT,	made and	dentered	into	this		day	of
2021,	by and	between	the	City of	Southfiel	d an	d the	Alliance of	Rouge Cor	nmunities
Party	of	the	First	Part,	hereinaf	ter	call	ed THE	OWNE	R and
Party	of the	Second I	Part,					h	hereinafter c	alled THE
COŃT	RACTO	R.								

WITNESSETH, that the Contractor and Owner, for the consideration hereinafter named agree as follows:

ARTICLE I - THE WORK

It is agreed that the Contractor shall furnish all the labor, materials, and equipment to perform all the work shown and called for on the Drawings and described in the Specifications prepared by Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC (ENGINEER) entitled ROUGE RIVER AREA OF CONCERN HABITAT RESTORATION — TAMARACK CREEK WETLAND & STREAM RESTORATION PROJECT, and shall do everything required by the Contract Documents. The Contract Documents being hereby defined to include the Agreement, Bonds, Drawings, Advertisement, Instructions to Bidders, Specifications and any Supplements thereto agreed to by both parties.

It is further agreed that the work shall be done using the following named materials and types of construction offered either in the base proposal or alternate thereto.

ARTICLE II - THE TIME

It is agreed that the Contractor shall begin work under this Contract within **10 days** of receipt of written notice to proceed and shall prosecute it in such manner as will bring the entire work to completion by November 15, 2022, except as such time limits may be advanced in accordance with the provisions herein.

It is agreed that the Contractor shall begin work under this Contract within **10 days** of receipt of written notice to proceed and shall prosecute it in such manner as will bring the Substantial Completion within <u>calendar days</u> of receiving the Notice to Proceed. At a minimum substantial completion of this Contract will be achieved no later than November 15, 2021, and that Intermediate Final Completion of this Contract within 90 calendar days after substantial completion, except as such time limits may be advanced in accordance with the provisions herein

The time of beginning, rate of progress and date of completion are considered essential elements of the Contract.

It is agreed that if the Contractor shall be unavoidably delayed in beginning or fulfilling this contract by reason by acts of Providence, or by general strikes, or by court injunction, or by stopping of the work by Owner because of any emergency or public necessity or by reason of alterations ordered by Owner, the Contractor shall have no valid claim for damages on account of any cause of delay; but he shall in such case be entitled to such an extension of the above time limit herein, as the Engineer shall adjudge to be just and reasonable; provided, however, that formal claim for such extension shall be made in writing by the Contractor within a week after the date upon which such alleged cause or delay shall have occurred.

ARTICLE III - LIQUIDATED DAMAGES

It is expressly covenanted and agreed that time is and shall be considered of the essence of the Contract. In the event that the Contractor shall fail to perform the entire work agreed to by or at the times herein mentioned as referenced to in Article II, or within some other certain date subsequent to this to which the time limit for the completion of the work may have been advanced under the provision of Article II, the Contractor shall pay unto the Owner as and for Liquidated Damages and not as a penalty, the sum of Five Hundred Dollars (\$500.00) for each and every calendar day that the Contractor shall be in default. Said sum of Five Hundred Dollars (\$500.00) per day, in view of the difficulty of estimating such damages with exactness, is hereby expressly fixed and agreed upon as the damages which will be suffered by the Owner for reason of such defaults. It is also understood and agreed that the Liquidated Damages herein before mentioned are in lieu of the actual damages arising from such breaches of this Contract, which said sums the Owner shall have the right to deduct from any monies in his hand otherwise due or to become due to the Contractor or to sue for and recover compensation for damages for nonperformance of this contract at the time stipulated herein and provided. Provided, however, it is understood and agreed that the foregoing provisions of this Article are without prejudice to any other right or remedy which the Owner may have under this Agreement.

ARTICLE IV - OWNER'S RIGHT TO COMPLETE

It is agreed that if at any time the Contractor should abandon this work; or if he should be adjudged as bankrupt, or if his performance of this Contract is being unnecessarily or unreasonably delayed; or if he should make a general assignment for the benefit of his creditors; or if a receiver should be appointed on account of his insolvency or if he should persistently or repeatedly fail to supply enough properly skilled workmen or sufficient suitable materials for the work; or if he should habitually fail to make prompt payment to Subcontractors or to pay promptly for materials and labor; or if he should persistently disregard laws or ordinances or the directions of the Engineer; or if he should willfully violate any of the substantial provisions of this Agreement as shall be determined by the Owner; then in such case the Owner, after giving the Contractor and his sureties written notice thereof, may order him to discontinue all work under this contract, or any part thereof, and shall cease to have any right to the possession of the ground. The Owner shall have the right to finish the work, or part thereof, by contract or otherwise as he may elect, and for that purpose to take possession and make use of such materials, tools, building appliances and equipment as may be found upon the work, and to charge the cost and expense of such completion to the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, the amount of such excess shall be paid to the Contractor; and if such expense shall exceed such unpaid balance, the Contractor and/or his surety shall pay the Owner the amount of such excess.

It is expressly stipulated and agreed that from and after the date of the order to discontinue work, and until such work shall have been finally completed by the Owner, neither the Contractor nor any of his agents or employees shall remove, or make any effort directly or indirectly to remove, any of the above mentioned materials, tools, building appliances or equipment from the work without consent of the Owner to do so.

It is further understood and agreed that the foregoing provisions of this article are without prejudice to any other right or remedy which the Owner may have under this Agreement.

ARTICLE V - ASSIGNMENT OF CONTRACT

It is agreed that the Contractor shall not assign or transfer this Contract or sublet any part of the work embraced in it except with the written consent of the Owner to do so.

It is further agreed that all parts of the work which may be performed by a Subcontractor shall be done in conformity with and be subject to all the provisions of the Contract Documents exactly as if performed by the Contractor and his immediate employees and workmen. No subletting of the work shall in any way diminish or weaken the responsibility of the Contractor for all parts of the work or lessen his obligations and liabilities under this Agreement.

It is likewise agreed that the Contractor shall not assign, either legally or equitably, any of the monies payable to him under this Agreement, or his claim thereto, except with the written consent of the Owner.

ARTICLE VI - THE CONTRACT SUM

And it is agreed that, in consideration of the faithful and entire performance by the Contractor of his obligations under this Contract, the Owner shall pay to him, at the time and in the manner hereinafter stipulated, an amount as determined by the measured quantities and the respective unit prices herein named:

NET TOTAL BID AMOUNT: \$

Such an amount shall be modified by such sums for alterations as may have been determined under the provisions of Article XI herein and diminished by such sums as the Owner may lawfully deduct and retain under the provisions of Article III and Article IV of this Agreement.

ARTICLE VII - NO ESTOPPEL

The Owner shall not, nor shall any agent thereof, be precluded or estopped by any progress estimate for payment or certificate, made or given by the Engineer, or other agent, under the provisions of this agreement, at any time (either before or after the final completion and acceptance of the work and payment made thereof pursuant to any such progress estimate for payment or certificate showing the true and correct amount of any money due therefore, notwithstanding any such progress estimate for payment or certificate, or any payment made in accordance therewith) from demanding and receiving from the Contractor or his Sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any such progress estimate for payment or certificate which has been untruly or incorrectly compiled.

ARTICLE VIII - PAYMENT TO CONTRACTOR

A. <u>Contract Value Less than \$30,000.00 or Contract with Provision for 3 or Fewer Payments</u> or Contract for Private Work

After the close of each month during which satisfactory progress has been made toward the final completion of the work, or when a specified time or phase of the work has been completed according to previous agreement or contract specifications, the Engineer will make an estimate of the amount and value of the work which has been done under this contract during that month, time period or since the date of the last preceding estimate. Such estimate shall not be required to be made by strict measurement or with exactness, but may be made by estimation, and it shall be sufficient if it is approximate only. Any error or inaccuracy which may occur in any such progress estimate may be allowed for or corrected in any subsequent estimate.

It is agreed that before the Contractor shall receive payment, he shall furnish to the Owner, if so requested, satisfactory evidence that all persons who have supplied labor, material, or equipment for the work embraced under this Contract have been fully paid for the same; and that in case such evidence is not furnished, such sums

as the Owner may deem necessary to meet the lawful claims of such persons may be retained by the Owner from any monies that may be due to the Contractor under this Agreement until such liabilities shall be fully discharged and the evidence thereof be furnished to the Owner.

As soon as practical, but not longer than 30 days, after such estimate is certified to the Owner by the Engineer, the Owner shall pay to the Contractor a sum equal to ninety percent (90%) of the amount of such estimate; except that the Owner may deduct and retain out of any such partial payment a sum sufficient to meet any undischarged obligations of the Contractor for labor, materials or equipment furnished for the work when such lawful claims are made known to the Owner.

The progress estimate and payment thus provided for will include all alterations which may be done under the provisions of Article XI on the same basis as other work is included. All such work is regarded herein as essentially a part of the Contract and not merely an addition to it.

In the case of equipment or other building material, but not including sewer pipe or water main and appurtenances associated therewith, properly stored and protected on the site, the Engineer may make allowance in the estimate of 75% of the value of such items.

No progress estimate made or certified by the Engineer and no partial payment made to the Contractor by the Owner shall be deemed or construed as an acceptance of any part of the work under this contract.

As soon as practicable after the satisfactory completion of all work covered by this Agreement, the Engineer will make a final inspection of the work as a whole, and will make up a final estimate of the total amount due the Contractor under the terms of the Agreement. Upon the acceptance of the completed work, the Owner will pay to the Contractor the entire amount of such final estimate, less the sums previously paid, and less such sums as the Owner may deem to be necessary to meet the undischarged obligations of the Contractor. The Contractor shall file with the Owner (1) a sworn statement that all claims for amounts due for labor have been paid in full, and (2) a sworn statement that all claims for amounts due for materials and equipment for this work have been paid in full, or he shall so file in lieu thereof, a sworn statement and waiver of lien showing in detail the nature and amount of all unpaid claims for said labor, materials and equipment.

B. Contract Value Greater than \$30,000.00 and Not Limited to 3 or Fewer Payments

payments;

Payment for contracts meeting the above criteria shall be regulated by P.A. No. 524 of 1980, effective January 1, 1983, and the following reference(s) to Section(s) and subsection(s) refer to this act.

______ is hereby designated as the (Print or Type Name)

person representing the Contractor who will submit written requests for progress

Alice Bailey, P.E. is hereby designated as the

person representing the Owner to whom requests for progress payments are to be submitted.

Written requests for progress payments shall be submitted after the close of each month during which satisfactory progress has been made toward the final completion of the work. Requests for payment shall conform to the established practices of the Owner and shall be made on standard forms prepared and/or furnished by the Owner. Progress payments shall be processed within the guidelines and applicable time limits set forth in Section 2.

Retention of a portion of payment otherwise due, when deemed appropriate by the Owner, shall not exceed the limits set forth in Section 3 (2); all such retainage to be maintained in separate financial accounts for each contract, deposited in interest bearing accounts in regulated financial institutions, when appropriate and as specified in Section 3 (3). Retainage and interest earned shall be released to the Contractor as set forth in Section 3 (4) and 3 (5), with exceptions as provided.

The progress payments thus provided for will include all alterations which may be done under the provisions of Article XI on the same basis as other work is included. All such work is regarded herein as essentially a part of the Contract and not merely an addition to it.

In the case of equipment or other building materials, but not including sewer pipe or water main and appurtenances associated therewith, properly stored and protected on the site, the Engineer may make allowance in the estimate of 75% of the value of such items.

No progress payment made or certified by the Engineer and no partial payment made to the Contractor by the Owner shall be deemed or construed as an acceptance of any part of the work under this contract.

It is agreed that the Owner may submit matters of dispute regarding a delay, for reasons that were within the control of the Contractor, or which have been caused, continued or aggravated by actions of the Contractor, to an agent who has background, training and experience in construction of similar facilities for resolution, as set forth in Section 4. The Owner and the Contractor shall be bound by the guidelines established for the resolution of disputes therein defined and by the subsequent guidelines established for the completion of the contract by a subcontractor selected by the Owner for occasions arising from the specified disputes.

As soon as practicable after the satisfactory completion of all work covered by this Agreement, the Engineer will make a final inspection of the work as a whole. The Contractor shall submit a written request for final progress payment to the Owner and the Owner will pay to the Contractor the entire amount of such final estimate including retainage and interest earned on retainage, less the sums previously paid, and less such sums as the Owner may rightfully retain as provided for in Section 4 (7) and 4 (8). The Contractor shall file with the Owner (1) a sworn statement that all claims for amounts due for labor have been paid in full, and (2) a sworn statement that all claims for amounts due for materials and equipment furnished for this work have been paid in full, or he shall so file in lieu thereof, a sworn statement showing in detail the nature and amount of all unpaid claims for said labor, materials and equipment.

ARTICLE IX - INDEMNITY & RELEASE

The Contractor hereby releases and covenants not to sue the City of Southfield, Michigan and the Alliance of Rouge Communities (Owner), Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC (Engineer) ,and Nolan Ten Mile Road Development, LLC, Scripps Media Inc & WXYZ-TV, Centrum Southfield, LLC, Michigan Department of Transportation their agents, employees and officers, and Ray Miller & Chanel Lewis-Miller (hereinafter referred to as Interested Parties), and shall indemnify and hold harmless the Owner, the Engineer, and the Interested Parties from and against any and all liability, causes of action, claims, demands, judgments, losses, damages and/or expenses, of whatsoever kind or nature, including attorney's fees and expert witness fees, and including claims for injury, mental or physical, or death to any person and/or damage to or destruction or loss of any property, real or personal, materials or equipment, (including, without limitation, damage to or destruction or loss of the Owner, the Engineer and the Interested Parties properties, materials or equipment) resulting, directly or indirectly, from or in connection with the Contractor's, or its agents', officials' or employees', performance of the Contract work, including, but not limited to:

- a.) Any negligent or tortious act, error or omission of the Contractor or any of its personnel, employees, subcontractors, or agents;
- b.) Any claim for any infringement upon any patent, copyright, trade secret, or trademark resulting from the performance of the Contract;
- c.) Any failure by the Contractor or any of its personnel, employees, consultants, or subcontractors to perform its obligations either expressed or implied under this Contract.

The Contractor understands and acknowledges that the performance of the work is required to be performed within a active river system and floodplain. The Contractor further acknowledges that it is an active flowing river and the floodplain area may, from time to time, become wet with water during the term of this Agreement. The Contractor hereby expressly assumes the risk, accepts all damages, and indemnifies the Owner, the Engineer, and the Interested Parties, from and against any damages, claims, or causes of action, for any damage to or loss of property and/or equipment, and/or any injury to any person, including death, incurred as a result of or in connection with undertaking the performance of the work in a river system. Further, the Contractor agrees to take all necessary and/or advisable precautions to protect its workers, subcontractors, and members of the public from any injury and/or damage to property as a result of or in connection with Contractor's performance of the work.

In the event that any action or proceeding shall be brought against the Owner, the Engineer and the Interested Parties and/or its agents, officials, or employees, by reason of any claim covered hereunder, the Contractor will, at its sole cost and expense, resist or defend the same.

This Article shall survive the expiration or termination of the Contract.

The Contractor expressly agrees that this indemnification and release provision is intended to be as broad and inclusive as is permitted by law and that if any portion thereof is held invalid, it is agreed that the balance shall, notwithstanding, continue in full legal force and effect.

ARTICLE X - AMENDMENTS

The parties to this Contract may, from time to time, consider it in their best interest to change, modify or extend a term, condition or covenant of this Contract or require changes in the scope of the services to be performed by the Contractor. Any such change, addition, deletion, extension or modification, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between Owner and the Contractor shall be incorporated in written amendments (herein called "Amendments") to this Contract. Such

Amendments shall not invalidate this Contract, nor relieve or release the Contractor of any of its obligations under this Contract unless expressly stated therein.

No Amendment to this Contract shall be effective and binding upon the parties hereto, unless it expressly makes reference to this Contract, is in writing and is signed and acknowledged by duly authorized representatives of both parties.

ARTICLE XI - ALTERATIONS

It is agreed that the Contractor shall make alterations to the work under this Contract as Owner may especially order in writing. Such alterations shall be paid for at prices mutually agreed upon at the time by Owner and the Contractor or using one or more of the methods set forth in Section 22 of the General Conditions.

In the case of additions only, where a price cannot be agreed upon in advance, then the Owner will pay and the Contractor shall accept, as full compensation for such work, an amount equal to the actual and necessary net cost in money for the Contractor for labor, materials and equipment (in addition to that available at the site) actually used therein or expended thereon, plus thirty percent (30%) of the total labor cost, plus ten percent (10%) of the actual net material cost, plus sales tax, plus ten percent (10%) of the actual net cost of any subcontract work for supervision, power, the use of tools and facilities available at the site, taxes, insurance, bond premium and all overhead and incidental expenses.

During the progress of any extra work which is to be paid for on the basis of net cost plus stipulated percentage, the Contractor shall furnish to Owner, at the end of each day, suitable time slips showing the name and the number of hours worked by each worker employed thereon, the nature of the work performed by such worker, and his rate of pay together with suitable and adequate memoranda of the materials used therein showing the character and amount of each such material, the sources from which it was purchased, and the price paid or to be paid therefor.

The Owner, at his discretion, may furnish to the Contractor any materials or supplies or transportation required for extra work. The Contractor shall not be entitled to any allowance for percentage on account of materials or supplies or transportation so furnished.

It is agreed that all work that may be ordered by the Owner and performed under the provisions of this Article shall be done by the Contractor in an effective and workmanlike manner and shall be subject to the same restrictions and liabilities as those which apply to the general work of this Contract; and the Contractor will be responsible for the maintenance and protection of such work until the time of the final acceptance of the entire job by the Owner.

It is further agreed that no claim against the Owner on account of alterations shall be valid unless such work has been previously ordered in writing, and unless such claim has been presented for payment as soon as practicable after the completion of such work and before the making up of the final estimate.

ARTICLE XII - CONFLICT OF INTEREST

The Contractor hereby warrants that it will not and has not, employed any employee of the Owner to solicit or secure this Contract upon any agreement or arrangement for payment of a commission, percentage, brokerage, or contingent fee, either directly or indirectly and that if this warranty is breached, the Owner at his election may terminate this Contract without penalty, liability or obligation, or may at his election, deduct from any amount owed to the Contractor hereunder the amounts of such commission, percentage, brokerage or contingent fee.

ARTICLE XIII - COMPLIANCE WITH APPLICABLE LAWS

The Contractor shall comply with all applicable laws, ordinances, regulations and codes of the federal, state and local governments during the term of this Contract. However, if any applicable law, ordinance, regulation or code changes during this Contract that substantially alters the obligation of the Contractor, the Contractor shall be compensated for additional obligations. The Contractor shall likewise save the Owner harmless with respect to any damages arising from any violation of the same by it.

ARTICLE XIV - NOTICES

All formal notices, consents, approvals, requests and other communications (herein called "notices") required to be in writing under this Contract shall be mailed by registered or certified first-class mail, postage pre-paid, and addressed as follows:

If to the Owner:

Ms. Brandy Siedlaczek
City of Southfield & The Alliance of Rouge Communities
P.O. Box 2055
26000 Evergreen Road
Southfield, Michigan 48037-2055

If to the Contractor:

All other communications in writing may be mailed first-class mail, postage pre-paid to the above address.

All notices shall be deemed given on the day of the mailing. Either party to this Contract may change its address for the receipt of the notices at any time by giving notice thereof to the other as herein provided. Any notice by a party hereunder must be signed by an authorized representative of such party.

ARTICLE XV - FAIR EMPLOYMENT PRACTICES

In accordance with the United States Constitution and all federal legislation and regulations governing fair employment practices and equal employment opportunity, including but not limited to Title VI of the Civil Rights Act of 1964 (P.L. 88-352, 78 STAT. 252), and United States Department of Justice Regulations (28 C.F.R. Part 42) issued pursuant to the Title, and in accordance with the Michigan Constitution and all state laws and regulations governing fair employment opportunity, including but not limited to the Michigan Civil Rights Act (P.A. 1976 No. 453) and the Michigan Handicappers Civil Rights Act (P.A. 1976 No. 220) the Contractor agrees that he will not discriminate against any person, employee, consultant or applicant for employment with respect to his(her) hire, tenure, terms, conditions or privileges of employment or hire because of his(her) religion, race, color, national origin, age, sex, height, weight, marital status, or handicap that is unrelated to the individual's ability to perform the duties of a particular job or position. The Contractor recognizes the right to the United States and the State of Michigan to seek judicial enforcement of the foregoing covenants against discrimination against itself or its subcontractors.

ARTICLE XVI - TERMINATION

The Owner may terminate this Contract for cause on twenty-four (24) hour notice. Any breach of the covenants and terms contained in this Contract may constitute grounds for termination for cause as determined by the Owner. The Contractor shall remain liable to the Owner for any damages sustained by the Owner by virtue of the Contractor's breach or any reasonable costs the Owner incurs enforcing or attempting to enforce this Contract. The Owner may withhold any payment(s) to the Contractor for purposes of set-off until such time as the exact amount of damages due the Owner from the Contractor has been determined by law or equity. It is expressly understood that the Contractor will remain liable for any damages the Owner may sustain in excess of any set-off. Should the Owner or his designee undertake any part of the services which are to be performed by the Contractor, the Contractor shall not be entitled to any compensation for the services so performed.

The Owner may terminate this Contract without cause for any reason at any time by giving written notice to the Contractor of such termination specifying the effective date thereof, at least fifteen (15) days prior to the effective date of such termination. If the Contract is so terminated, the City will pay the Contractor only for the services rendered prior to termination, which payment shall constitute full and complete payment and satisfaction under the Contract.

ARTICLE XVII - MISCELLANEOUS

The Contractor agrees they understand and acknowledge that the performance of the contract work is required to be executed within a river system and floodplain. That it is an active flowing river, and the floodplain area may, from time to time, become wet and/or underwater during the performance of the contract work. The Contractor has taken into account the potential for any water level changes that might occur in costing and performing the contract work and acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project will likely happen and will not constitute a change in conditions or an unforeseen site condition.

No failure by the Owner to insist upon strict performance of any covenant, agreement, term or condition of this Contract or to exercise any right, term or remedy consequent upon a breach thereof, shall constitute a waiver of any such breach or of such covenant, agreement, term or condition. No waiver of any breach shall affect or alter this Contract, but each and every covenant, agreement, term and condition of this Contract shall continue in full force and effect with respect to any other existing or subsequent breach thereof.

If any provision of this Contract or application thereof to any person or circumstance shall, to any extent, become invalid or unenforceable, the remainder of the Contract, or the application of such provisions to persons or circumstances other than those as to which it is invalid or unenforceable shall not be affected thereby, and each provision of this Contract shall be valid and enforceable to the fullest extent permitted by law.

The headings and sections of this Contract are for convenience only and shall not be used to construe or interpret the scope of intent of this Contract or in any way affect the same.

The rights and remedies set forth herein are not exclusive and are in addition to any of the rights and remedies provided by law or equity. The Contract shall be governed by, and be subject to, and construed according to the laws of the State of Michigan.

This Agreement may be executed in any number of counterparts. All such counterparts shall be deemed to be originals and together shall constitute one and the same instrument.

This Agreement shall bind and the rights, benefits and advantages shall insure to the successors of the Owner.

This Contract shall not become effective until approved by the Owner and executed by the authorized officials thereof.

IN WITNESS WHEREOF the Owner and the Contractor, by and through their duly authorized representatives, have executed this Agreement as of the year and date first written above.

This Agreement is dated	
CITY OF SOUTHFIELD:	CONTRACTOR
Ву:	By:
Title:	Title:
Attest:	Attest:
Title:	
ALLIANCE OF ROUGE COMMUNITIES:	
By: Doug Moore	
Title: Chairperson	
Attest:	
Title:	

ACKNOWLEDGEMENT OF AUTHORITY

NOTE: An officer of the firm *other* than the officer signing the contract on page A-10 must complete, date and sign this form. The purpose of this form is to verify that the person signing on page A-10 has the legal authority to enter your firm into a contract with the City of Southfield and the Alliance of Rouge Communities. Full and proper completion of this form is required by the City's Legal Department in order for your contract to be approved.

l,	_ as	of	f
(Type or Print Your Name	_ as) (Your Office or F	Position)	
4.	do hereby certify that _ (Na		
(Name of Firm)	(Na	ame of Person Signing Co	ontract)
is	of	and	that he
(Office or Position)	(Nam	ne of Firm)	
is authorized to execute, guarantee ar		me of Firm)	to
conditions, obligations and undertakin	gs contained in this Contrac	ct or Agreement.	
IN WITNESS THEREOF, I have	set my hand this da	ay of,	19
	(You	r Signature)	_
	(104	, Oignataio,	

7/93

INSTRUCTIONS FOR EXECUTING AGREEMENT

If the Contractor has a corporation, the following contificate chould be executed

in the Contractor be a corporation, the	i following Co	GIUII	cale .			_
I,					that I am the	
	_Secretary	of	the	Corporation	named a	s Contractor
hereinabove;	-				who signed	t
the foregoing Agreement on behalf of	the Contrac	ctor,	was	then		of said
Corporation; that said Agreement wathority of its governing body, and is	vas duly sig	gned	l for	and in beha	If of said C	
(0	Corporate Se	eal)				

If the Agreement be signed by the secretary of the corporation, the above certificate should be executed by some other officer of the corporation, under the corporate seal. In lieu of the foregoing certificate there may be attached to the Agreement copies of so much of the records of the corporation as will show the official character and authority of the officers signing, duly certified by the secretary or assistant secretary under the corporate seal, to be true copies.

The full name and business address of the Contractor should be inserted, and the Agreement should be signed with his official signature. Please have the name of the signing party or parties typewritten or printed in black ink under all signatures to the Agreement.

If the Contractor should be operating as a partnership, each partner should sign the Agreement. If the Agreement be not signed by each partner there should be attached to the Agreement a duly authenticated power of attorney evidencing the signer's (signers') authority to sign such Agreement for and in behalf of the partnership.

If the Contractor be an individual, the trade name (if the Contractor be operating under a trade name) should be indicated in the Agreement and the Agreement should be signed by such individual. If signed by one other than the Contractor there should be attached to the Agreement a duly authenticated power of attorney evidencing the signer's authority to execute such Agreement for and in behalf of the Contractor.

1/93

CITY OF SOUTHFIELD and ALLIANCE OF ROUGE COMMUNITIES NON-COLLUSION AFFIDAVIT

SS: County			
	<u> </u>	being fi	rst
duly Sworn,			
deposes and says that he is the [Individual, Par	rtner, Corporate Officer)		_
making the foregoing proposals or bids; that s	such bids are genuine and not collus	sive or sha	m;
such bidder has not colluded, conspired, cor	nnived, or agreed, directly or indirec	ctly, with a	ny
bidder or person, to put in a sham bid, or that	such other person shall refrain from	n bidding a	nd
has not in any manner, directly with any person	n, to fix the bid price of affiant or any	other bidde	er,
or to fix any overhead, profit or cost element of	said bid price, or of that of any other	r bidder, or	to
secure any advantage against the City of Sout	hfield, The Alliance of Rouge Comm	unities or a	ny
person or persons interested in the proposed	d bids; and that all statements cont	ained in sa	aid
proposal are true; and further, that such bidder	has not, directly or indirectly submitted	ed this bid,	or
the contents thereof, or divulged information or	r data relative thereto to any associa	tion or to a	ny
member or agent thereof.			
	Affiant		
Sworn to and subscribed before me this	day of	, 20	<u>.</u> .
	Notary Public		
	My Commission Expires:		

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GENERAL CONDITIONS

1. CONTRACT DOCUMENTS

The original and three counterparts of the Contract shall be signed by the Owner and the Contractor, unless otherwise required.

The work under this Contract shall consist of the items listed in the Proposal, including all incidentals necessary to fully complete the project in accordance with the Contract Documents. The Contract Documents shall consist of the Advertisement, Instructions to Bidders, Proposal, Specifications, General Conditions, General Supplementary Conditions, Contract, Bonds and Contract Drawings.

2. CONTRACT DRAWINGS AND SPECIFICATIONS

The work to be done is shown on the accompanying set of original drawings prepared by Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC (ENGINEER) on behalf of Alliance of Rouge Communities, Michigan (OWNER), and are hereby made a part of this Contract, it being mutually understood and agreed that when taken together, the drawings and contract documents, including the specifications and the general conditions, are complimentary, and what is called for by any one shall be binding as if called for by all. The intent of the Contract Documents is to include in the contract price the cost of all labor and materials, water, fuel, tools, plant, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the work.

These original drawings may be supplemented by other drawings furnished by the Contractor and approved by the Engineer or supplied to the Contractor by the Engineer during the progress of the work as he may deem to be necessary or expedient. All such supplementary contract drawings or instructions are intended to be consistent with the Contract Documents, true developments thereof and reasonably inferable therefrom. Therefore, no extra charge will be allowed on a claim that particular supplemental contract drawings or instructions differed from the Contract Documents, incurring extra work, unless the Contractor has first brought the matter, in writing, to the Engineer's attention for proper adjustment before starting on the work covered by such and has received from the Engineer an order in writing to so proceed.

These original and supplementary drawings constitute the drawings according to which the work is to be done. The Contractor shall keep at the site of the work an approved or conformed copy of all drawings and specifications and shall at all times give the Engineer or Owner access thereto.

In case any inconsistency, omission or conflict shall be discovered in either specifications or drawings, or if in any place, the meaning of either or both shall be obscure, or uncertain, or in dispute, the Engineer shall decide as to the true intent and his decision shall be final and binding.

3. ENGINEER'S STATUS

The Engineer shall furnish consultation and advice to the Owner during construction. He has authority to stop the work whenever such stoppage may be necessary to insure that the finished work will be in accordance with the plans and specifications. He shall also have authority to reject all work and material which does not conform to the drawings and specifications.

4. INSPECTOR'S STATUS

The Owner may appoint on the job inspectors who shall be under the direction of the Engineer. The inspector on the work will inform the Engineer as to the progress of the work, the manner in which it is being done, and the quality of the materials being used. The inspector will call to the attention of the Contractor any failure to follow the drawings and specifications that he may observe. The inspector shall have the authority to reject materials or suspend the work until any questions on the performance of the work can be referred to and decided by the Engineer. The inspector shall have no authority to direct the Contractor's work or workmen, to supervise the Contractor's operations or to change the contract drawings or specifications.

In no instance shall any action or omission on the part of the inspector release the Contractor of the responsibility of completing the work in accordance with the drawings and specifications.

5. CONTRACTOR'S RESPONSIBILITY

The Contractor shall assume full responsibility for the work and take all precautions for preventing injuries to persons and property on or about the work; shall bear all losses resulting to him on account of the amount or character of the work or because the conditions under which the work is done are different, 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 the weather, floods, elements or other causes, and he shall assume the defense and save harmless the Owner and its individual officers and agents from all claims relating to labor provided and materials furnished for the work; to inventions, patents, and patent rights used in doing the work; to injuries to any persons or property received or sustained by or from the Contractor, his agents or employees in doing the work or arising out of the work performed or to be performed; and to any act, or neglect of the Contractor, his agents or employees.

The mention of any specific duty or liability of the Contractor in this or in any part of the Contract Documents shall not be construed as a limitation or restriction upon any general liability or duty imposed on the Contractor by the Contract Documents.

6. PERMITS AND REGULATIONS

The Contractor shall secure, at no cost to the Owner, all permits and licenses necessary for the prosecution of the work. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all existing and future laws, ordinances, regulations, orders, and decrees. Provided that if the drawings and specifications are at variance therewith, the Contractor shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the Contract Documents.

7. SUBCONTRACTS

The Contractor shall not sublet, assign, or transfer this Contract or any portion thereof or any payments due him thereunder, without the written consent of the Owner.

Assignment or subletting the whole or any portion of this Contract shall not operate to release the contractor or his bondsmen hereunder free from any of the contract obligations.

The Contractor shall, as soon as practicable after the signing of the Contract, notify the Owner in writing of the names of subcontractors proposed for the work and shall not employ any that the Owner may object to as incompetent or unfit.

If the Contractor shall cause any part of the work under this Contract to be performed by a subcontractor, the provisions of this Contract shall apply to such subcontractor and his officers and employees in all respects as if he and they were employees of the Contractor, and the Contractor shall not be in any manner thereby relieved from his obligation and liabilities; and the work and materials furnished by the subcontractor shall be subject to the same provisions as if furnished by the Contractor.

8. INFORMATION BY THE CONTRACTOR

The Contractor shall submit to the Engineer full information as to the materials, equipment, and arrangements which the Contractor proposes to furnish. This information shall be complete to the extent that the Engineer may intelligently judge if the proposed materials, equipment, and arrangements will meet the contract requirements.

Prior to the approval of materials, equipment, and arrangements by the Engineer based on the information.

submitted by the Contractor, any work done by the Contractor shall be at his own risk.

The approval of information covering materials, equipment, and arrangements by the Engineer shall in no way release the Contractor from his responsibility for the proper design, installation and performance of any material, equipment, or arrangement, or from his liability to replace same should it prove defective.

9. GENERAL REQUIREMENTS FOR MATERIALS & WORKMANSHIP

In the specifications where a particular material or piece of equipment is specified by reference to some particular make or type, or equal, it is not the intent to limit competition but to set up by such reference a standard of quality most easily understood and defined. If materials or equipment of other make or type than that specified by name are offered by the Contractor, they will be given full consideration by the Engineer and the Engineer's decision will be final as to whether the materials or equipment offered are equal to those specified.

Unless otherwise stipulated in the specifications, all equipment, materials, and articles incorporated in the work covered by this Contract are to be new and of the best grade of their respective kinds for the purpose. The Contractor shall, if required, furnish such evidence as to kinds and quality of materials as the Engineer may require.

The Contractor shall furnish suitable tools and building appliances and employ competent labor to perform the work to be done, and any labor or tools or appliances that shall not, in the judgment of the Engineer, be suitable or competent to produce this result may be ordered from the work by him and such labor or tools or appliances shall be substituted therefor by the Contractor as will meet with the approval of the Engineer.

If not otherwise provided, material or work called for in this contract shall be furnished and performed in accordance with well known established practice and standards recognized by architects, engineers and the trade.

10. TESTING AND SAMPLING

Where called for in the specifications, samples of materials in the quantity named shall be submitted to the Engineer for approval. Where tests are required, they shall be made at the expense of the Contractor, except as otherwise called for in the specifications. For materials covered by ASTM or Federal Specifications, unless otherwise stipulated, the required tests are to be made by the manufacturer and his certificate therefor submitted to the Engineer.

11. LINES AND GRADES

The OWNER shall provide contract drawings based on local surveys for construction in order for the Contractor to establish property corners, monuments, benchmarks, and similar reference points as needed to perform the work.

The Contractor shall be responsible for staking and control of the construction activities.

The Contractor shall take due and proper precautions for the preservation of stakes and marks, and shall see to it that the work at all times proceeds in accordance therewith and shall provide all labor and material to set required batter boards and locate the work accurately with reference to the points.

The Contractor shall inform the Owner whenever any reference point used in establishing the construction drawings is lost or destroyed or requires relocation. Reference points destroyed by Contractor shall be replaced at Contractor expense.

12. PROTECTION OF WORK AND PROPERTY

The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect all public property and private abutting property from injury or loss arising in connection with this Contract. He shall, without delay, make good any such damage, injury or loss, and shall defend and save the Owner harmless from all such damages or injuries occurring because of his work. He shall furnish and maintain all passageways, barricades, guard fences, lights and danger signals, provide watchmen and other facilities for protection required by public authority or by local conditions, all at no additional cost to the Owner.

In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall take such action as may be necessary to prevent such threatened damage, injury or loss.

The Contractor shall assume full responsibility of loss or damage to the work during the entire construction period resulting from caving earth and from storms, floods, frosts, and other adverse weather conditions, and from all other causes whatsoever, not directly due to the acts or neglect of the Owner, including fire, vandalism and malicious mischief, and shall turn the finished work over to the Owner in good condition and repair, at the time of the final estimate.

13. RESPONSIBILITY FOR ADJOINING STRUCTURES & TREES

The Contractor shall assume full responsibilities for the protection of all pavements, curbs, bridges, railroads, poles and any other surface structures and all water mains, sewers, telephone, gas mains, and other underground services and structures along and near the work which may be affected by his operations, and shall indemnify, defend and save harmless the City of Southfield, Michigan and the Alliance of Rouge Communities (Owner), Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC (Engineer) and, Nolan Ten Mile Road Development, LLC, Scripps Media Inc & WXYZ_TV, Centrum Southfield, LLC, Michigan Department of Transportation, Ray Miller & Chanel Lewis-Miller (Interested Parties), against all

damages or alleged damages to any such structure arising out of his work. The Contractor shall bear the cost of repair or replacement of any such structure damaged as a result of his operations.

No trees or shrubbery of any kind shall be removed or destroyed by the Contractor without the written permission of the Owner, and the Contractor will be held fully responsible for any damages caused by his work to adjoining trees and shrubs. Ample precautions shall be taken by the Contractor to protect such trees and shrubs as are to remain in place by surrounding them with fences or other protection before construction work begins. Shrubbery that has to be removed shall be preserved and replaced in a manner acceptable to the Owner.

14. MAINTENANCE OF SERVICE

Drainage through existing sewers and drains shall be maintained at all times during construction and all nearby gutters shall be kept open for drainage. Where existing sewers are encountered in the line of the work which interfere with the construction, the flow in the sewers, including both dry weather flow and storm flow, shall be maintained.

All detours shown on the drawings or required because of the Contractor's operations shall be built and maintained at the Contractor's expense.

Safety precautions shall be followed at all street openings, substantial barricades shall be erected as deemed necessary to prevent accidents to vehicular or pedestrian traffic and red flags by day and red lights by night shall be diligently posted by the Contractor at all points of possible danger. In case detours or other traffic instructions are necessary, suitable warning or direction signs shall be erected and maintained by the Contractor.

During the progress of the work, the Contractor shall accommodate both vehicular and foot traffic and shall provide free access to fire hydrants, water and gas valves. Except as otherwise specified herein or as noted on the drawings, street intersections may be blocked but one-half at a time, and the Contractor shall lay and maintain temporary driveways, bridges and crossings, such as in the opinion of the Owner are necessary to reasonably accommodate the public.

In the event of the Contractor's failure to comply with these provisions, the Owner may with or without notice, cause the same to be done; and will deduct the cost of such work from any money due or to become due the Contractor under this Contract, but the performance of such work by the Owner or at his instance, shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or the work.

15. STORAGE OF MATERIALS

Materials and equipment distributed, stored and placed upon or near the site of the work shall at all times be so disposed as not to interfere with work being prosecuted by other contractors in the employ of the Owner, result in violation of any State of Local ordinance or SESC requirements or with street drainage, or with fire hydrants or with access thereto, and not to hinder, any more than may be necessary, the ordinary traffic of the street.

16. RELATION TO OTHER CONTRACTORS

The Contractor shall so conduct his operations as not to interfere with or injure the work of other contractors or workmen employed on adjoining or related work and he shall promptly make good any injury or damage which may be done to such work by him or his employees or his agent. Should a contract for adjoining work be awarded to another contractor, and should the work of one of these contracts interfere with that of the other, the Owner shall decide which contractor shall cease work for the time being and which shall continue or whether the work in both contracts shall continue at the same time and in what manner.

17. CONTRACTOR'S SUPERVISION AND ORIGINATION

The work under this Contract shall be under the direct charge and direction of the Contractor. The Contractor shall give efficient superintendence to the work, using his best skill and attention. The Contractor shall at all times keep on the site of the work, during its progress, a competent superintendent and any and all necessary foremen and assistants. The superintendent shall represent and have full authority to act for the Contractor in the latter's absence, and all directions given to him shall be as binding as if given to the Contractor. On written request in each case, all such directions will be confirmed in writing to the Contractor.

The Contractor shall employ only competent, efficient workmen and shall not use on the work any unfit person or one not skilled in the work assigned to him, and he shall at all times enforce strict discipline and good order among his employees. Whenever the Owner shall notify the Contractor, in writing, that any man on the work is, in the opinion of the Owner, careless, incompetent, disorderly, or otherwise unsatisfactory, such man shall be discharged from work and shall not again be employed on it except with the written consent of the Owner.

The Contractor shall establish and maintain an office on the site of the work or at some convenient point adjacent thereto, during the continuance of this Contract

and shall have at all times during working hours, a representative authorized to receive and execute any and all orders, when given by the Engineer; and such order, when given out and received by said representative shall be deemed to have been given to and received by the Contractor. Copies of the drawings and specifications shall at all times be kept on file by the Contractor at readily accessible points near the work.

18. FACILITIES FOR INSPECTION

The Owner, the Engineer, and their employees shall at all times have the right to enter upon the premises upon which work is being done, or upon which material is stored for the work under this Contract, and to inspect the work

and materials, and to ascertain whether or not the construction is carried out in accordance with this Contract, and the Contractor shall furnish all reasonable facilities, and given ample time for such inspection. All materials shall be subject to mill and shop inspection, as provided in the specifications.

The Contractor shall promptly remove from the premises all materials rejected by the Engineer as failing to meet contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and reexecute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such rejected work and materials promptly, after written notice, the Owner may remove them and store the material at the expense of the Contractor.

The Engineer has the right to have removed by the Contractor such portion of the work as he may deem necessary for the discovery of improper work or material, and the Contractor must restore such work at his own expense if improperly done and at the expense of the party of the first part if found to be in proper condition. Any work which, during its progress and before its final acceptance, may become damaged from any cause, shall be removed and replaced by good, satisfactory work at the Contractor's expense.

19. SHOP DRAWINGS

Where called for in the specifications, the Contractor shall submit to the Engineer for approval, not less than five copies of details, specifications, cuts, and drawings of such equipment and structural work as may be required. The Contractor shall make any changes or alterations required by the Engineer and re-submit same without delay. The approval of the Engineer shall not relieve the Contractor of responsibility for errors in the drawings, as the Engineer's checking is intended to cover compliance with the drawings and specifications and not to enter into every detail of the shop work. No work shall be undertaken until the Engineer has approved the shop drawings.

20. ERRORS AND CORRECTIONS IN DRAWINGS AND SPECIFICATIONS

The Contractor shall examine and check all drawings and specifications furnished by the Owner for dimensions, quantities, and coordination with other parts of the work on this or related contracts and shall notify, in writing, the Engineer of any and all errors, omissions, or discrepancies he may discover by examining and checking of same. The Contractor shall not be allowed to take advantage of any such error, omission, or discrepancy, as full instructions will be furnished by the Engineer, and the Contractor shall carry out such instructions as if originally specified. In no case shall the Contractor proceed with the work in uncertainty, and any work done by the Contractor after the discovery of any error, omission, or discrepancy,

until authorized, will be at the Contractor's risk and responsibility. The work is to be made complete and to the satisfaction of the Engineer, not withstanding any minor omissions in the specifications or drawings.

21. CHANGES IN THE WORK

The Owner shall have the right to require, by written order, changes in, additions to, or deductions from the work required by the contract documents; provided that if changes, additions, or deductions are made, the general character of the work as a whole is not changed thereby. Adjustments in the contract price, if any, because of any change, addition, or deduction in the work shall be determined as hereinafter provided, and any claim for extension of time for completion shall be adjusted at the time of ordering the change, addition, or deduction. No claim for change, addition, or deduction, or adjustment of price, or extension of time for completion thereof, shall be made or allowed unless done in pursuance of a written order from the Owner specifically authorizing such change, addition, or deduction. Drawings without a written order shall not be considered such authority. Written notice of such claims shall be made to the Engineer before the commencement of work. Where the written order diminished the quantity of work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the work that may be deleted.

Under circumstances which, in the judgment of the Engineer, so necessitate, the Engineer shall have authority to require, by written order, changes in, additions to, or deductions from the work. Such written order by the Engineer shall be subject to later confirmation by the Owner when the extent and costs have been established.

It is understood and agreed that in case any change in, addition to, or deduction from the work is required, said change shall in no way invalidate the Contract and shall not affect or discharge the bonds furnished by the Contractor.

The Contractor, without extra charge, shall make such slight alterations as may be necessary to make adjustable parts fit to fixed parts, leaving all complete and in proper shape when done.

22. BASIS FOR DETERMINING COST OF CHANGES IN THE WORK

Adjustments, if any, in the contract price by reason of change in the work shall be limited to the amount specified in the written order authorizing the change in the work. Adjustments shall be determined by one or more of the following methods, the Owner reserving the right to select the method or methods at the time the written order is issued:

 a) An acceptable lump sum or itemized proposal: To facilitate checking and acceptance, the proposal shall be itemized with quantities and prices given for the various items.

- b) Unit Prices: The unit prices may be the "Unit Price" set in the Agreement, or fixed by subsequent agreement between the Owner and the Contractor.
- On a cost-plus-limited basis not to exceed a specified maximum limit of cost:

"COST" as herein used shall be the actual and necessary costs incurred by the Contractor by reasons of the change in the work for:

- 1) Labor
- 2) Materials
- 3) Equipment Rental
- 4) Insurance Premiums
 - Labor Costs shall be the amount shown on the Contractor's payroll with payroll taxes added when such taxes can be shown to have been incurred. In no case shall the rates charged for labor exceed the rates paid by the Contractor for the same class of labor employed by him to perform work under the regular items of the Contract.
 - 2) Material Costs shall be the net price paid for material delivered to the site of the work. If any material previously required is omitted by the written order of the Owner after it has been delivered to or partially worked on by the Contractor and consequently will not retain its full value for other uses, the Contractor shall be allowed the actual cost of the omitted material less a fair market value of the material as determined by the Owner.
 - 3) Equipment Rental shall be the actual additional costs incurred for necessary equipment. Costs shall not be allowed in excess of usual rental charged in the area for similar equipment of like size and
 - condition, including the costs of necessary supplies and repairs for operating the equipment. No costs, however, shall be allowed for the use of equipment on the site in connection with other work unless its use incurs actual and additional costs to the Contractor. If equipment not on the site is required for the change in the work only, the cost of transporting such equipment to and from the site shall be allowed.
 - 4) Insurance Premiums shall be limited to those based on labor payroll and to the types of insurance required by the Contract. The amount allowed shall be limited to the net costs incurred as determined from the labor payroll covering the work. The Contractor shall, upon request of the Owner, submit verification of the applicable insurance rates and premium computations.

"PLUS" as herein used is defined as a percentage to be added to the items of "Cost" to cover superintendence, use of ordinary tools, bonds, overhead expense and profit. The percentage shall not exceed 15 percent on work done entirely by the Contractor and shall not exceed an aggregate total of 20 percent on work done by a subcontractor.

"SPECIFIED MAXIMUM LIMIT OF COST" is the amount stated in the written order of the Owner authorizing the change in the work. The amount to be allowed the Contractor shall be the "cost" and "plus" the percentage or the specified maximum, whichever is the lesser amount.

The Contractor shall keep complete, accurate, daily record of the net actual cost of changes in the work, and shall present such information in such form and at such times as the Owner may request.

23. PATENTS

The Contractor shall pay all royalties and license fees and shall hold and save the Owner and his agent harmless from all liability of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the owner, unless otherwise specifically stipulated in the Contract Documents. In this respect the Contractor shall defend all suits or claims for infringement of any patent or license right.

In the event that any claim, suit, or action at law or in equity of any kind, whatsoever, is brought against the Owner, involving any such patents or license rights, then the Owner shall have the right to, and may, retain from any money due or to become due to the Contractor, such sufficient sum as is considered necessary to be retained by the Owner until such claim or suit shall have been settled and satisfactory evidence to that effect shall have been furnished the Owner.

24. "OR EQUAL" CLAUSE

Whenever in any of the Contract Documents an article, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal" if not inserted, shall be implied. The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, material and aesthetic quality desired and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and efficiency. The Contractor shall comply with the requirements of the Contract Documents relative to the Owner's approval of materials and equipment before they are incorporated in the work.

25. CLEANING UP

The Contractor shall remove at his own expense from the Owner's property and from all public and private property all temporary structures, rubbish and waste materials

resulting from his operations. This requirement shall not apply to property used for permanent disposal of rubbish or waste materials in accordance with permission of such disposal granted to the Contractor by the Owner thereof.

26. USE OF COMPLETE PORTIONS OF THE WORK

The Owner may, at any time during progress of the work, after written notice to the Contractor, take over and place in service any completed portions of the work which are ready for service, although the entire work of the Contract is not fully completed, and notwithstanding the time for completion of the entire work or such portions may not have expired. In such event, the Contractor will be relieved of further work on or maintenance of said portion, except as covered by his guarantee of same.

27. PAYMENT WITHHELD

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate for progress payment to such extent as may be necessary to protect itself from loss on account of:

- a) Defective work not remedied.
- b) Claims filed or reasonable evidence indicating probable filling of claims.
- Failure of the Contractor to make payments properly to subcontractors or for material or labor.
- A reasonable doubt that the Contract can be completed for the balance then unpaid.
- e) Damage to another contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

28. CONTRACTOR'S RIGHT TO STOP WORK

If the work should be stopped under an order of any court, or other public authority for a period of three months, through no act or fault of the Contractor or of

anyone employed by him, or if the Owner should fail to pay to the Contractor any sum certified by the Engineer, provided no appeal is taken, the Contractor may, upon seven days written notice to the Owner and the Engineer, stop work or terminate this Contract, and shall receive from the Owner payment in full for all work executed, as determined from the prices contained in the approved detailed estimate as computed by the Engineer, but no claim for extra compensation or damages shall be made or allowed because of such termination of the Contract.

29. FAIR EMPLOYMENT PRACTICES ACT

The Contractor agrees that neither he nor his subcontractor will discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to his hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of his race, color, religion, national origin or ancestry. Breach of this covenant may be regarded as a material breach of this Contract.

30. AUTHORITY

No agent of the Owner shall have power to revoke, alter, enlarge, or relax the stipulation or requirements of these specifications, except insofar as such authority may be specifically conferred by the specifications themselves, without the formal authorization to do so, conferred by the Contract of which the specifications are a part, or by ordinance, resolution, or other usual official action by the Owner.

31. STARTING WORK

Material shall be ordered and work shall begin on the ground within thirty (30) days after the Contract is signed, unless otherwise stated.

32. SANITARY REGULATIONS

Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained in sanitary condition by the Contractor, and their use shall be strictly enforced.

33. SUNDAY AND NIGHT WORK

The Contractor is required to prosecute work done under this Contract during the hours of daylight, and no work will be permitted at night or on Sundays, except to save property or life or as specifically authorized or directed by the Owner. Tunnel work may be prosecuted at night except on Sundays.

34. PROGRESS OF WORK

The work shall be prosecuted regularly and uninterruptedly, unless the Owner shall otherwise specifically direct, with such force and at such points as to insure its full completion within the time herein stated.

If, in the opinion of the Owner, it is necessary or advisable that certain portions of the work be done immediately, the Contractor, upon written order, shall proceed with such work without delay. Should he fail to so proceed, the Owner may do or cause to be done, such work, and the cost of the same will be deducted from any money due or to become due the Contractor under this Contract.

35. TIME OF COMPLETION

The time allowed for completion of the work contemplated in this Contract shall be as stated in the proposal or specifications.

36. EXTENSION OF TIME

All days in which work is suspended by order of the Engineer, or in accordance with these specifications, shall automatically extend the time for completion an equal number of days.

37. TIME IS ESSENCE OF CONTRACT

It is distinctly understood and agreed to by the parties hereto that the time specified for the completion of the work is the essence of this Contract, and the Contractor shall not be entitled to claim performance of this agreement unless the work is satisfactorily completed, in every respect, within the time herein specified.

38. ESTIMATED QUANTITIES

The quantities of the various classes of work to be done and materials to be furnished under this Contract, which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the work under this Contract; and neither the Owner nor his agents is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work; and the Contractor shall make no claim for anticipated profit, nor for loss of profit, because of a difference between the quantities of the various classes of work actually done or materials actually delivered and the estimated quantities as herein stated.

39. FORFEITURE OF CONTRACT

If the work to be done under the Contract shall be abandoned by the Contractor, or if at any time in the judgment of the Owner, the Contractor shall fail to prosecute the work at a reasonable rate of progress, or to comply with all or any of the terms and requirements herein set forth, then the Owner shall have the right to take possession of the work, including Contractor's plant, supplies, and materials, at any time after having notified the Contractor in writing to discontinue the work under this Contract for said cause or causes, and such action shall not affect the right of the Owner to recover damages resulting from such failure. Upon receiving such notice, the Contractor shall and will, upon demand, immediately give the Owner safe and peaceable possession of the

work, including the plant, and shall then cease to have control over any portion thereof or the men employed thereon.

The Owner may then proceed to complete the work herein specified, by contract or otherwise; and the entire cost of the same shall be charged to the Contractor and deducted from any sum or sums due or to become due under the Contract; the excess cost, if any, to be paid by the Contractor or his sureties, to said Owner.

40. NO WAIVER OF CONTRACT

Neither the acceptance of the whole or any part of the work by the Owner or his Engineer, or any of its agents, nor any order, measurements, or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for the whole or any part of the work by the Owner, nor any extension of time, nor any possession taken by the Owner or its agents, shall operate as a waiver for any portion of the Contract or any power therein provided; nor shall any waiver of any breach of the Contract be held to be a waiver of any other or subsequent breach.

41. PAYMENT NOT TO BE STOPPED

The Owner shall not, nor shall any officer thereof, be precluded or estopped by any return or certificate made or given by the Engineer, or other officer, agent or appointee, under the provisions of this agreement, at any time (either before or after the final completion and acceptance of the work and payment made therefor pursuant to any such return or certificates showing the true and correct amount of money due therefor, notwithstanding any such return or certificate, or any

payment made in accordance therewith) from demanding and receiving from the Contractor or his sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any such return or certificate which has been untruly or incorrectly compiled.

42. GUARANTEE

The Contractor, as a condition precedent to final payment, shall execute a guarantee to the Owner warranting for a period of two years from the date of final payment to keep in good order and repair any defect in all the work done under the Contract, either by the Contractor or his subcontractors, or the material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship, or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and the Contractor shall execute, in favor of the Owner, the attached Maintenance and Guarantee Bond.

When the specifications call for a guarantee period greater than two years, the Contractor shall provide such longer guarantee period.

43. ESTIMATES AND PAYMENTS

The Owner shall pay and the Contractor receive the prices bid in the proposal, or agreed upon, less any deduction for any uncompleted portion, based upon measurements made by the Engineer or as otherwise herein stipulated, and such measurements shall be final and conclusive.

As an aid to the Owner in preparing estimates for progress payments, the Contractor may be required to submit to the Owner for approval a breakdown of some or all contract unit prices into their essential component parts. The sum of component parts shall not exceed the total contract price per unit and the breakdown shall not overrule the contract price per unit.

The Contractor shall submit to the Owner a written request for each payment and a Contractor's Declaration declaring that he has not performed any work, furnished any material, sustained any loss, damage or delay, for any reasons, including soil conditions encountered or created, or otherwise done anything for which he will ask, demand, sue for, or claim compensation from the Owner other than, as indicated on the Contractor's Declaration. When requested by the Owner, the Contractor shall submit

receipts or other vouchers showing his payments for materials and labor, including payments to subcontractors.

Payments based on progress estimates will be made on a monthly basis for work completed during the preceding month or since the date of the last preceding progress payment. Payments will be in accordance with the provisions of Act 524 of the Michigan Public Acts of 1980 and in accordance with the terms of this Contract. No allowance will be made for materials furnished which are not incorporated in the finished work, unless otherwise stated.

Pursuant to Act 524, Michigan Public Acts of 1980, the Owner shall designate a person representing it to whom written requests for payments shall be submitted. The Contractor shall designate a person who shall submit written requests for payment to the Owner.

In the event a dispute arises over an avoidable or unacceptable delay in the performance of the work as described in Section 4(3) of Act 524 of Michigan Public Acts of 1980 [MCLA125.1564(3)], the dispute may, at the option of the Owner, be submitted for resolution in accordance with the provisions of Section 4 of Act 524 of

the Michigan Public Acts of 1980 to an agent designated pursuant to Section 4(2) of the Act. The dispute resolution process described above shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds.

The Owner may withhold the payment of any estimate or portion of estimate until the Contractor shall have furnished satisfactory evidence that he has paid all claims of every nature.

No payment shall be considered as acceptance of the work or any portion thereof prior to the final completion of the work, and the payment of the final estimate.

Within thirty (30) days after the completion of the work under this Contract to the satisfaction of the Owner and the Engineer, in accordance with all and singular terms and stipulations herein contained, the Owner shall make final payment, from a final estimate made by the Engineer. Before final payment is made, the Contractor shall, as directed by the Owner, furnish a Contractor's Affidavit that he has paid or satisfactorily secured all claims of every nature. Also, the Contractor shall furnish a release from the surety or sureties and permit agencies as applicable, approving payment of final estimate by the Owner. The final payment, when made, shall be considered as final approval and acceptance of the completed work herein specified.

The acceptance by the Contractor of the final payment aforesaid shall operate as, and shall be, a release to the Owner and his agents, from all claim and liability to the Contractor for anything done or furnished for, relating to the work, or for any act or neglect of the Owner or of any person relating to or affecting the work.

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period		
tosustained any loss, damage or delay for any reason, ir		any work, furnished any material
sustained any loss, damage or delay for any reason, in anything for which I shall ask, demand, sue for, or claim c	ncluding soil conditions encountere	d or created, or otherwise done
	the Owner, or his agents,	
regular items set forth in the contract numbered	and dated	A.D.,
20for		
executed between myself and the Owner, and in the C thereunder, except as I hereby make claim for additional statement attached hereto.		
There (is) (is not) an itemized statement attached.		
Date:		
Company:		
Ву:		
Position:		

CONTRACTOR'S AFFIDAVIT

STATE OF MICHIGAN)			
SS County of)			
The undersigned			_	
hereby represents that on			he (it) was awar	ded
a contract by				
hereinafter called the Owr	ner, to			=
		, in	accordance with the te	rms
	ct No; and the under d contract has now been completed.	signed further represents	that the subject work I	nas now been
fully paid or satisfactorily accomplishing the said pi paid or satisfactorily settle responsibility for the same	warrants and certifies that all of his (its y secured; and that all claims from roject, as well as all other claims arisited. The undersigned further agrees the immediately upon request to do so by all all able consideration, the receipt of	subcontractors and oth ing from the performance at if any such claim shoul y the Owner.	ners for labor and ma of the said contract, had d hereafter arise, he (it)	terial used in ave been fully shall assume
release and relinquish an	y and all claims or right of lien which and material used in accomplishing s	the undersigned now ha	as or may hereafter acc	
This affidavit is freely and	voluntarily given with full knowledge o	f the facts, on this	_ day of	. 20
Company:		-		
Ву:		-		
Title:		-		
	before me, a Notary Public in and for _ , 20		_ County, Michigan, on	this
	Notary I	Public		
My Commission Expires _				

GENERAL SUPPLEMENTARY CONDITIONS - INSURANCE AND BONDS

INSURANCE

Insurance Required of the Contractor

Prior to commencement of the work, the Contractor shall purchase and maintain during the term of the project such insurance as will protect him, the City of Southfield, Michigan and the Alliance of Rouge Communities (Owner), Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC (Engineer) and, Nolan Ten Mile Road Development, LLC, Scripps Media Inc. & WXYZ TV, Centrum Southfield. LLC. Michigan Department Transportation, Ray Miller & Chanel Lewis-Miller (Interested Parties), from claims arising out of the work described in this contract and performed by the Contractor, Subcontractor(s) or Sub-Subcontractor(s) consisting of:

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. Longshoremen 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.

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 him.
- d. Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found hereinafter.
- 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.

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 and including Michigan "No Fault" coverages. In light of

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 the Comprehensive General Liability and the Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.

Where such an exposure exists, the Contractor shall purchase for the Owner an Owner's Protective Liability policy to protect the Owner, Engineer and Interested Parties, 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.

The 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 the Engineer, 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, vandalism, collapse, theft and earthquake, with exclusions normal to the cover. The Contractor may arrange for such deductibles as he deems to be within his ability to self-assume, but he will be held solely responsible for the amount of such deductible and for any coinsurance penalties. Any insured loss shall be adjusted with the Owner and the Contractor and paid to the Owner and Contractor as trustee for the other insureds.

Umbrella or Excess Liability

The 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 his automobile liability insurance.

Railroad Protective Liability

Where such an exposure exists, the Contractor will provide coverage in the name of each railroad company having jurisdiction over rights-of-way across which work under the contract is to be performed. See Additional Named Assured.

Limits of Liability

The required limits of liability for insurance coverages shall be <u>not less than</u> the following:

Worker's Compensation Coverage A - Compensation Statutory Coverage B - Employer's Liability \$100,000 Comprehensive General Liability Bodily Injury - Each Occurrence \$500,000 Bodily Injury - Aggregate (Completed Operations) \$500,000 Property Damage - Each Occurrence \$100,000 Property Damage - Aggregate \$500,000 or combined single limit \$1,000,000 Comprehensive Automobile Liability **Bodily Injury** \$500,000 Property Damage \$200,000 or combined single limit \$1,000,000 Owner's Protective -See GCS/3 Umbrella or Excess Liability See GSC/3

Insurance - Other Requirements

Notice of Cancellation or Intent Not to Renew - Policies will be endorsed to provide that at least 30 days written notice shall be given to the Owner and to the Engineer of cancellation or of intent not to renew. See Additional Named Assured.

Evidence of Coverage

Prior to commencement of the 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 of the items prescribed in the Owner's Form of Certificate, including agreement to cancellation provisions outlined herein, and (2) they have written approval of the Owner and the Engineer. The Owner reserves the right to request complete copies of polices if deemed necessary to ascertain details of coverage not provided by certificates. Such policy copies shall be "Originally Signed Copies," and so designated.

- A. Insurance Required for the Contractor.
- 1. Worker's 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
- 2. Comprehensive Automobile Liability including owned, non-owned and hired vehicles, and Michigan "No Fault" coverages.
- 3. Umbrella or Excess Liability
- B. Insurance Required for the Owner

Owners' Protective Liability which names as insured(s) the City of Southfield, Michigan, the Alliance of Rouge Communities (Owner), Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering LLC (Engineer) and Nolan Ten Mile Road Development, LLC, Scripps Media Inc. & WXYZ-TV, Centrum Southfield, LLC, Michigan Department of Transportation, Ray Miller & Chanel Lewis-Miller (Interested Parties), their consultants, agents, employees and such public corporations in whose jurisdiction the work is located. (See Additional Named Assured hereinafter).

Qualification of Insurers

In order to determine financial strength and reputation of insurance carriers, all companies providing the coverages required shall be licensed or approved by the Insurance Bureau of the State of Michigan and shall have a financial rating no lower than XI and a policyholder's service rating no lower than B+ as listed in A.M. Best's Key Rating Guide, current edition. Companies with ratings lower than B+; XI will be acceptable only upon written consent of the Owner.

BONDS

Contract Security

If the Owner is a public entity, the Contractor shall furnish a surety bond (form attached) in an amount at least equal to 100 percent of the contract price as security for the faithful performance of this contract. The Contractor shall furnish, also, a separate surety bond (form attached) in an amount at least equal to 100 percent of the contract price as security for the payment of all persons performing labor on the project under this contract, and furnishing materials in connection with this contract. The surety on each such bond shall be a duly authorized surety company satisfactory to the Owner.

Regardless of whether the Owner is or is not a public entity, the Contractor shall furnish a Maintenance and Guarantee Bond (form attached) covering all work under this contract. The guarantee is to cover a period of two (2) years subsequent to the date of the final estimate, unless otherwise specified.

Indemnification

The contractor agrees to indemnify, defend, and save harmless the City of Southfield, Michigan, the Alliance of Rouge Communities (Owner), Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering LLC (Engineer) and Nolan Ten Mile Road Development, LLC, Scripps Media Inc. & WXYZ-TV, Centrum Southfield, LLC, Michigan Department of Transportation, Ray Miller & Chanel Lewis-Miller (Interested Parties), their consultants, agents, employees and such public corporations from and against all loss or expense (including costs and attorney's fees) by reason of liability imposed by law upon the Owner, Engineer, and the Interested Parties, their consultants, agents, and employees for damages because of bodily injury, including death at any time resulting therefrom, sustained by any person or persons or on account of damage to property, including loss of use thereof, 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 subcontractors, the Owner, Engineer, and the Interested Parties, and their consultants, agents, and employees, except only such injury or damage as shall have been occasioned by the sole negligence of the Owner, Engineer, and the Interested Parties, and their agents and/or consultants.

Limits of Liability

Umbrella or Excess Liability Limit	\$1,000,000
Owner's Protective	
Bodily Injury - Each Occurrence	\$1,000,000
Property Damage - Each Occurrence	\$ 250,000
Property Damage - Aggregate	\$ 500,000
Or Combined Single Limit	\$1,500,000

Additional Named Insured *

The "Owner": City of Southfield, Michigan Alliance of Rouge Communities

Other Property Owners:
Nolan Ten Mile Road Development, LLC
Scripps Media Inc & WXYZ-TV
Centrum Southfield, LLC
Michigan Department of Transportation
Ray Miller & Chanel Lewis-Miller

The "Engineer":

Environmental Consulting & Technology, Inc. and it's affiliate ECT Engineering, LLC.

*On all policies other than Worker's Compensation.

Advance Notice of Cancellation or Intent Not to Renew

is to be furnished the Owner at the following address:

Attention: City of Southfield

Purchasing Department 26000 Evergreen Road Southfield, MI 48076 248-796-5215 fax

TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT SUPPLEMENTAL PROJECT NOTES

GENERAL

These specifications form a part of the Specifications and Contract Documents for the Rouge River AOC Tamarack Creek Stream and Wetland Restoration Project with the requirements herein specified supplementing and/or superseding those contained in the balance of the Specifications and Contract documents.

The "Owner" for this project is defined as the entity with whom the Contractor has entered into the Agreement and shall be considered the City of Southfield, and the Alliance of Rouge Communities.

"Interested Parties" - The property within which the project is to be performed is owned by: Nolan Ten Mile Road Development, LLC, Scripps Media Inc & WXYZ-TV, Centrum Southfield, LLC, Michigan Department of Transportation and Ray Miller & Chanel Lewis-Miller.

The "Engineer" is Environmental Consulting & Technology, Inc. (ECT) and its affiliate ECT Engineering, LLC, and will act as the Owner's Representative for this project.

The Contractor shall conform to all applicable OSHA and MIOSHA regulations.

Familiarity with Site

By providing a bid for the project, the Contractor acknowledges that he has visited the project site and understands the working conditions.

Industry Rules and Codes

The successful bidder shall keep fully informed of all local, state, and federal laws, ordinances, and regulations. The successful bidder shall at all times observed and comply with such laws, ordinances and regulations which pertain to all materials, equipment, and employees.

Labor Laws and Ordinances

The Contractor shall obey and abide by all the laws of the State in which the work is being performed relating to the employment of labor on public work and all the laws and requirements of the Owner regulating or applying to public improvements.

Patents and Patent Rights

The Contractor shall protect and save the Owner harmless against all claims or actions brought against the Owner by reason of any actual or alleged infringement upon patent rights in any article, material, process, machine or appliance used by him in his work.

Guarantee

The Contractor shall guarantee all materials and workmanship for a period of one (1) year from the final acceptance of the completed work and shall repair, replace or make good any materials of work, which shall fail to function or perform or be found defective, without cost to the City. Contractor warrants and guarantees that the work will be in accordance with the Contract Documents and will not be defective, and that title to all work, materials and equipment will pass to Owner free and clear of all liens.

Waiver of Lien

Upon completion of all work and request for final payment, the Contractor shall furnish a **full unconditional waiver of lien** from each supplier and sub-contractor covering all items of work. Failure to supply full unconditional waivers of lien for the entire job upon completion and final payment request will be considered grounds for withholding final payment.

2. **EXISTING CONDITIONS**

Each bidder shall personally visit the sites of the projects and pay particular attention to the existing conditions and the salient features of the projects in order to assure himself of the amount of equipment, materials, and work required to satisfy the requirements of the projects.

General: The project work is to occur in and along Tamarack Creek in the City of Southfield. The proposed work is to be conducted on property owned by: Nolan Ten Mile Road Development, LLC, Scripps Media Inc &WXYZ-TV, Centrum Southfield, LLC, Michigan Department of Transportation and Ray Miller & Chanel Lewis-Miller.

Base Survey: The Contract Documents reflect surveys and elevations at the work area as found in conditions surveys made as stated on the Drawings. The conditions shown are indicative of those that prevailed at the time of the site investigations and may be different than those at the time of construction. General locations of applicable existing utilities, vegetation, structures, equipment and improvements, based upon latest information available have been shown on the Drawings. However, it is the Contractor's obligation to establish the exact horizontal and vertical location and size of any and all existing utility lines which are located within the required work area. The Contractor shall submit a copy of its utility location findings prior to commencing work on the site. Any utility lines which are found by the Contractor shall be reported to the Owner/Engineer immediately. The Owner/Engineer will have the option of directing commencement of work at the site or requiring the Contractor to submit plans for locating the utility lines. If the Contractor damages any existing utility line, vegetation, structure, equipment or improvement, a report thereof shall be made immediately to the Engineer. In any event, existing utility lines, vegetation, structures, equipment or improvements shall be protected from damage, and if damaged, shall be repaired by the Contractor at its own expense.

Subsurface and Physical Conditions: The following are documents that were used in the preparation of the Bidding Documents. The contents of these documents are considered "technical data":

- 1. Topographic Survey, Tamarack Creek, as prepared by Midwestern Consulting, Inc., dated December, 2018.
- 2. Environmental Data Report: Rouge River Area of Concern, Tamarack Creek- Habitat Design, Stream and Wetland Restoration, Southfield, Michigan- as prepared by Somat Engineering, Inc., dated March 8, 2019
- 3. Soil Test Boring Report: Detention Basin Expansion Study- as prepared by Schleede-Hampton Associates, Inc., dated August 26, 2004

Water Elevations: The water surface elevation at the time of survey is shown on the Project Drawings. Water levels fluctuate. Contractor to use best available information to understand the conditions of the water levels.

Project Scheduling: No in-stream work may occur between April 15 and June 15 of any calendar year that this permit is active without the use of silt curtains to segregate defined work zones, with progression of work within one zone at a time. If such work occurs the permittee shall contact EGLE 48 hours prior to the commencement of construction activities and submit a plan drawing indicating silt curtain layout and the segregation of work areas.

Working Within a River System: The Contractor understands and acknowledges that the performance of the work is required to be performed within a Rouge River system and floodplain. That it is an active flowing river, and the floodplain area may, from time to time, become wet and/or underwater during the performance of the work. The Contractor has taken into account the potential for any water level changes that might occur in costing, scheduling, and performing the contract work. Therefore, the Contractor acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project is likely and does not constitute a change in conditions or an unforeseen site condition.

The Contractor shall be fully aware of the Rouge River hydrology and current weather conditions so that work in progress can be secured and protected at all times, so that safe job site working conditions are

maintained, and so that soil erosion is controlled in accordance with all applicable permits and environmental laws.

The Contractor acknowledges that delays in the start of, or completion of, work due to fluctuations in the water level throughout the duration of the project shall not constitute a change in conditions nor shall be a basis for any extension of time or damages. If the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reasons of changing water levels, storms, inundation, or floods, the Contractor shall have no valid claim for damages, but shall in such case be entitled to an extension of time as the Engineer shall adjudge to be just and reasonable, provided that formal claim for an extension of time is made in writing by the Contractor within one week of the alleged delay.

The Engineer reserves the right to suspend work activities when it is in the best interest of the project to do so due to weather, flow, or water level conditions. The directive to suspend work activities shall be submitted to the Contractor in writing with justification. Such suspension shall not be basis for claim for additional cost but can be basis for extension of time.

The Contractor shall research available information and perform its own independent investigations as needed in an effort to fully understand environmental conditions associated with the project site. The Contractor shall understand the site conditions that will affect the cost, schedule, or performance of work in advance of starting such work.

3. **TIME**

Contract work shall begin within ten (10) days of receipt of written notice to proceed. At a minimum substantial completion of this Contract will be achieved no later than November 15, 2021. Intermediate Final completion of this Contract within 90 calendar days after substantial completion. Final contract completion no later than November 15, 2022.

4. SUBSTANTIAL AND ITERMEDIATE FINAL COMPLETION

Substantial Completion shall be defined as all project work activities, with the exception of Live Stake Installation, Site Restoration, As-built Survey and Drawings, Continuation of Vegetation Maintenance, Vegetation Warranty, guarantees and contract close out.

Intermediate Final Completion shall include Live Stake Installation, Site Restoration, As-Built Survey and Drawings, and close out documents. Vegetation Maintenance and warranty shall extend beyond this period in order to fulfill the Contract requirements

5. COOPERATION WITH OTHER CONTRACTORS

The Contractor shall make every effort to cooperate and coordinate with all other contractors working in the area at the time of construction, if required

6. **DISPOSAL OF REMOVED DEBRIS**

All materials removed; with the exception of clean topsoil or fill dirt where required for fill areas indicated on the plans, shall be legally disposed of off-site. Materials may be temporarily stored on-site prior to final disposal if required. Temporary areas are shown on plans or as directed by the Owner. No exceptions will be considered, and all costs associated with transporting, disposing, etc., shall be considered as included in the appropriate bid items. When no specific bid item exists, the costs associated with compliance of this provision shall be considered incidental to the project.

7. WATER

If the Contractor desires to use City water for construction, he shall obtain the required permit from the City. A hydrant connection will then be issued to him by the Water Department. The Contractor must deposit the required fee as charged by the Water Department for the use of the hydrant connection. The unused portion of the deposited fee will be refunded to the Contractor upon the return of the connection. The use of privately owned hydrant connections is prohibited. When connections are made to hydrants, the Contractor shall promptly notify the City of Southfield Fire Department.

8. **CLEANING OF STRUCTURES**

The Contractor shall protect catch basins and manholes. All materials that enter the structures as a result of the contractor's operations shall be removed immediately. Prior to final acceptance of this project, all existing and proposed structures within the area disturbed by this construction shall be thoroughly cleaned of all debris.

9. **RESTORATION OF SPRINKLER SYSTEMS**

While no specific bid item has been created for repair of any sprinkler systems in the areas of work, if required, the Contractor shall be responsible to restore those areas equal to what existed prior to the start of construction, and shall promptly restore the sprinkler system in working order by making temporary or permanent repairs within five (5) days of the initial disruption, incidental to this project.

10. SOIL EROSION AND SEDIMENTATION CONTROL

If included as a specific bid item, the lump sum amount bid for soil erosion and sedimentation control shall be payment in full for all costs incurred with burlap wrap of all drainage structures within 150 feet of the proposed project and maintenance of said soil erosion devices through the construction period. At the time of completion of the project, it will be the responsibility of the Contractor to remove those devices. If a specific bid item is not included, all soil erosion and sedimentation control costs which may be incurred shall be incidental.

11. MAINTAINING TRAFFIC

Access to all private drives shall be maintained at all times. When it is necessary to cut drives, a temporary repair of 2" thick cold patch asphalt shall be made immediately upon completion of backfilling. All public road damage shall be repaired upon completion of the work. All costs associated with complying with this requirement shall be incidental to this project.

12. MAINTAINING SOLID WASTE (RUBBISH) SERVICES

Rubbish collection shall not be interfered with by the Contractor's operations. If access to certain areas is blocked by the Contractor's operations, he shall transport the rubbish himself to a location accessible to the collection crews, incidental to the project.

13. LOCAL REQUIREMENTS

Contractor to comply with the City of Southfield Ordinances.

The City of Southfield permits construction between the hours of 7:00 A.M., and 6:00 P.M., Monday through Saturday, unless otherwise authorized by the City. Should an emergency arise which would require working beyond the hours mentioned, the Contractor shall contact the Engineer for approval for work beyond the permitted hours.

14. **INSURANCE FOR GRASS GROWTH**

This contract will not be final accepted by the Owner until all work is completed and all disturbed landscape is restored to the same approximate condition as existed prior to construction. Grass restoration shall be per the specifications.

15. **BUILDING ACCESS**

The contractor shall maintain access to the building entrances at all times.

16. **CLEANUP AND RESTORATION**

The cleaning of pavement, as required, shall be paid for under the contract unit price for the contract item (pay item) "RESTORATION". The contract lump sum bid price for this item shall be payment in full for all cleaning and restoration required for the duration of the project, including the final cleanup and restoration. It is the Owner's intent to minimize the inconvenience of dust and debris created by construction of this project to the adjacent neighbors. In an effort to comply with the Owner's goals, the Contractor shall be obligated to clean the pavement within four (4) hours of notification. Should the Contractor fail to respond within the four-hour requirement, the Owner retains the right to retain an outside contractor at a minimum three hour time at a minimum \$60.00

per hour rate to provide the services of pavement cleaning. All costs incurred by the Contractor's failure to respond to the notification shall be deducted from any payments due the Contractor.

17. REPLACEMENT TREES

For each tree at least four (4) inches in diameter removed from the Contract Limits, other than the trees removed as part of the Contract Work, the CONTRACTOR shall be required to plant two trees as part of the site restoration work. The new trees shall be 2 ½ inch caliper, balled and burlapped. Trees are to be free of disease, broken limbs, and scaring to meet standard nursery quality. Tree species to be utilized include sugar maple (Acer saccharum), white oak (Quercus alba), and shagbark hickory (Carya ovata), as directed by ENGINEER.

18. **PERMITS AND REGULATIONS**

The Contractor shall secure and bear the cost of any permits or licenses of a temporary nature necessary for the execution of the work. The following permits have been obtained for the project: Joint Permit has been obtained from the Michigan Department of the Environment, Great Lakes & Energy. A permit has also been obtained from the Michigan Department of Transportation (MDOT) for work located within MDOT property and easements. Copies of the permits are included in the Appendix of the Contract Documents. The Contractor is responsible for adhering to the requirements included in those permits. All other permits, including the Soil Erosion and Sediment Control permit, shall be the Contractor's responsibility to secure. Additionally, he shall secure and bear the cost of shutting off and turning on public services of every nature which may be required by his operations. Where such discontinuance of service affects consumers, due and sufficient notice shall be served upon those so affected.

All permit requirements shall be adhered to. The following is a collection of highlighted requirements:

- "Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, the construction shall be done on equipment mats to prevent compaction of the soil."
- "During removal or repair or repair of existing structures, every precaution shall be taken to
 prevent debris from entering any watercourse. Any debris reaching the watercourse during the
 removal and/or reconstruction of the structure shall be immediately retrieved from the water. All
 material shall be disposed of in an acceptable manner consistent with local, state, and federal
 regulations."
- "No work shall be done in the stream during periods of above-normal flows except as necessary to prevent erosion."
- "If the project, or any portion of the project, is stopped and lies incomplete for any length of time (other than that encountered in a normal work week) every precaution shall be taken to protect the incomplete work from erosion, including the placement of temporary gravel bag riprap, temporary seed and mulch, or other acceptable temporary protection."
- "Prior to the initiation of any permitted construction activities, a sedimentation barrier shall be constructed immediately down gradient of the construction site. Sedimentation barriers shall be specifically designed to handle the sediment type, load, water depth, and flow conditions of each construction site throughout the anticipated time of construction and unstable site conditions. The sedimentation barrier shall be maintained in good working order throughout the duration of the project. Upon project completion, the accumulated materials shall be removed and disposed of at an upland (non-wetland, non-floodplain) site and stabilized with seed and mulch. The sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover."
- "No in-stream work may occur between April 15 and June 15 of any calendar year that this permit
 is active without the use of silt curtains to segregate defined work zones, with progression of work
 within one zone at a time. If such work occurs the permittee shall contact EGLE 48 hours prior to
 the commencement of construction activities and submit a plan drawing indicating silt curtain
 layout and the segregation of work areas."

19. GRANTING AGENCY REQUIREMENTS

Construction work is being funded by the United States Environmental Protection Agency (EPA) through a Great Lakes Restoration Initiative (GLRI) grant. All construction contracts associated with this work are subject to specific terms and conditions that may not necessarily be standard in typical construction contracts. Agency grant conditions are attached as an appendix to the Contract Documents.

20. MBE/WBE PARTICIPATION

The Contractor shall, pursuant to 40 CFR, Part 33, Subpart D, comply with the following fair share objectives for the Project:

Minority Business Enterprise (MBE): 10% Women Business Enterprise (WBE): 7.5%

The Contractor shall, pursuant to 40 CFR, Section 33.301, make the following good faith efforts whenever procuring construction, equipment, services and supplies under the Contract, and to require that such subcontractors also comply. Records documenting compliance with the following six good faith efforts shall be retained:

- 1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities, including placing DBEs on solicitation lists and soliciting them whenever they are potential sources, if applicable.
- 2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs, including dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process, if applicable.
- 4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- 5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- 6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (1) through (5) of this section.

21. **PROTECTION OF SPECIFIC SPECIES**

No in-stream work may occur between April 15 and June 15 of any calendar year that this permit is active without the use of silt curtains to segregate defined work zones, with progression of work within one zone at a time. If such work occurs the permittee shall contact EGLE 48 hours prior to the commencement of construction activities and submit a plan drawing indicating silt curtain layout and the segregation of work areas

Indiana Bat: Any trees 5 inches DBH or larger are to be considered potential bat habitat. Any trees of this size shall not e cut between April 1 and September 30 in any year to avoid take of Indiana bat (Myotis sodalist), a federally listed endangered species unless the trees has been certified as not potential bat habitat by a wildlife biologist OR an approved method of Indiana bat survey/ assessment has been completed by a wildlife biologist. Trees that are not determined to be bat habitat may be felled, cleared, and grubbed at any time and without the required protocol described here within.

There is a bid line item for felling and removal of bat habitat trees, which includes the assessment described here within. Additional information regarding the bat habitat assessment is included at the end of this section.

Eastern Massasauga Rattlesnake: Contractor to use wildlife safe materials for erosion control and site restoration (materials that do not incorporate plastic mesh or other similar material that could ensnare Easter Massasauga Rattlesnake (EMR)). Contractor and subcontractors onsite should watch MDNR's "60 Second Snakes: The Eastern Massasauga Rattlesnake" video and/or review the USFWS EMR Factsheet. Contractor must report any EMR observations, or observation of any other listed threatened or endangered species during project implementation to Engineer within 2 hours of the observation.

22. SPECIAL ENVIRONMENTAL PROTECTION REQUIREMENTS

- 1. No ropes, cables, or guys shall be fastened to or attached to any tree(s) for anchorage unless specifically authorized by the Engineer. Where such special use is permitted, the Contractor shall provide effective protection to prevent damage to the tree and other land and vegetative resources.
- 2. The Contractor shall confine all activities to areas defined by the Drawings and Specifications or as approved by Engineer. Except in areas indicated on the Drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without approval. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Soil, or other materials displaced into undisturbed areas shall be removed by the Contractor.
- 3. The Contractor shall conduct diligent operating practices to prevent the spread of Aquatic Nuisance Species (ANS) from one location to another on the Great Lakes, or from one water body to another. Such practices shall include, but not be limited to, cleaning equipment and watercraft (prior to it's being brought to the project site and prior to its removal when no longer needed at the site) to prevent the spread of seeds, eggs, larvae, soil, plant material, or other dispersal vectors; and discharging or exchanging ballast water or other water from a vessel of any type only at a location where the chances for survival of ANS are minimal, such as at cold, deep regions of the Great Lake which are far from shore.
- 4. Material placement, staging, and access shall occur only in those areas designated on the contract Drawings or as approved by Engineer. Staging operations shall be managed and controlled to prevent erosion of placed soil or sediment from entering nearby waters or wetlands. All staging shall be in areas designated on the Plans.
- 5. Disposal of any materials, waste, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to streams, rivers, or lakes and in areas not authorized for waste disposal shall not be permitted. If any waste material is dumped or placed in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, ground which has become contaminated through the fault or negligence of the Contractor shall be excavated, disposed of as directed by the Engineer, and replaced with suitable fill material compacted and finished with topsoil and planted as required to re-establish vegetation, all at the expense of the Contractor. Disposal of waste, trash and other materials off the project site shall be in accordance with all applicable Federal, State, and local laws, rules and regulations.
- 6. Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, ashes, sawdust, waste washings, herbicides and insecticides, rubbish or sewage, and other pollutants from entering public waters. Fueling and lubrication of equipment and plant shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants and waste oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with Federal, State, and local laws and regulations
- 7. Hazardous wastes are hazardous substances as defined in 40 CFR 261, or as defined by applicable State and local regulations. Hazardous waste generated by construction activities shall

be removed from the work area and be disposed in compliance with Federal, State, and local requirements. The Contractor shall segregate hazardous waste from other materials and wastes and shall protect it from the weather by placing it in a safe covered location; precautionary measures against accidental spillage such as berming or other appropriate measures shall be taken. Hazardous waste shall be removed from Owner-furnished property within 30 days. Hazardous waste shall not be dumped onto the ground, into storm sewers or open watercourses, or into the sanitary sewer system. A copy of the manifest shall be provided to the Engineer for any hazardous waste disposed of under this contract.

- 8. Odors from all construction activities, processing and preparation of shall be controlled at all times and shall not cause a health hazard.
- 9. Ground vibrations from construction activities shall be controlled at all times to prevent damage.
- 10. The Contractor shall keep construction activities under surveillance and control to prevent excessive noise. Construction equipment shall be fitted with noise control devices should noise be deemed excessive.

23. HISTORICAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

If, during construction activities, items are observed that may have historic or archaeological value (e.g., human remains or associated objects, or artifacts are discovered), such items shall be protected in place and the observations shall be reported immediately to the Engineer so that the appropriate agency may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to, or the destruction of, these resources. The Contractor shall prevent its employees from trespassing on, removing, or otherwise disturbing such resources.

24. ADDITIONAL INFORMATION REGARDING BAT HABITAT

A preliminary bat habitat assessment will be completed for the clearing limits associated with this project and information on trees considered to be bat habitat will be provided to the contractor. It should be noted that all other trees presented in the Contract Documents that are not listed in the assessment may be felled, cleared and grubbed at any time and without the required habitat protocol described here within.

Trees that are listed as potential bat habitat should be addressed in one of the following ways:

- 1. If possible, arrangements should be made to fell ALL of the listed trees prior to April 1, 2021.
- 2. If all trees cannot be felled prior to April 1, 2021, as many of the trees as possible should be felled prior to April 1, 2021.
- 3. For all trees not felled prior to April 1, 2021, approval of Bat Survey Protocol by the U.S. Fish & Wildlife Service (USFWS) and completion of the Bat Survey Protocol is required in order to fell the trees. The results of the habitat assessment (provided to the contractor by ECT) and the proposed Bat Survey Protocol (prepared by the contractor) should be submitted to the USFWS for review and approval before completing the survey. The contractor may choose one of the following activities for the Bat Survey Protocol:
 - a. Emergence Survey- this type of survey involves having a wildlife biologist conduct a survey at dusk to visually inspect the tree and determine whether bats (of any species) are using the tree as a roost. If the tree is determined not to be an active roost, if should be felled immediately that evening, or at first light the next morning. The survey protocol for an emergence survey should be submitted to the USFS prior to conducting the survey.
 - b. Acoustic Survey- this type of survey involves the placement of recording devices within the clearing limits which record all record all bat calls. A bat biologist will then need to analyze the call data to determine which types of bats are found within the project area.

The survey protocol for an acoustic survey should be submitted to the USFWS prior to conducting the survey. Generally, the dates that acoustic surveys will be approved for use by USFWS are May 15- August 15.

c. Mist Net Survey0 this type of survey involves the placement of mist nets in strategic locations within the project area and capturing live bats. A bat biologist who is certified by USFWS to handle Indiana bats must conduct this type of survey. The survey protocol for a mist net survey should be submitted to the USFWS prior to conducting the survey. Generally, the dates that mist net surveys will be approved for use by USFWS are May 15-August 15.

For complete survey guidelines please refer to the <u>USFW 2017 Range-Wide Indiana Bat Summer Survey</u> Guidelines (May 9, 2017).

PERFORMANCE BOND

KINOW ALL WEN DY THESE PRESENT	S, That we, the undersigned
as Principal, and	
of	
as Sureties, are hereby held and firmly bound ur	nto the
in the full and just sum of	
Dollars (\$) for the payme	ent of which well and truly to be made, we hereby
jointly and severally bind ourselves, our heirs, ex	xecutors, administrators, successors and assigns.
Signed and sealed this day o	f, 20
The condition of the above obligation is	such that if said
shall well and faithfully do and perform the things	s agreed by
to be done and performed by the annexed contra	act, according to the terms thereof, then this
obligation shall be void; otherwise, the same sha	all remain in full force and effect.
modify, discharge or release this bond.	Seal)
	(Seal) Principal
	(Seal)
Signed, Sealed and Delivered	(Seal)
in the Presence of:	

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESEN	NTS, That we
of	, hereinafter called the Principal, and
hereinafter called the Surety, are held and firm	ly bound unto the People of the State of Michigan, in the
sum of	
Dollars (\$) to the payme	ent whereof, well and truly to be made, we bind ourselves,
our heirs, executors, administrators, successor presents.	rs and assigns, jointly and severally, firmly by these
Sealed with our seals and dated this	day of, A.D., 20
WHEREAS, The above named Princip	al has entered into a contract with the
dated the day of	, A.D., 20 wherein said
Principal has covenanted and agreed as follow	ys, to-wit:
To furnish all the labor and material	
the Public Acts of Michigan, for the year 1963, NOW, THEREFORE, The condition of Principal to any Subcontractor or by him or any of all indebtedness which may arise from him materials or supplies or any Subcontractor to performed or materials or supplies furnished in be void; otherwise, the same shall be in full for AND PROVIDED, That any alterations work to be done under it, or the giving by the	s which may be made in the items of said contract, or in the party of the first part to said contract, of any extension of
shall not in any way release the Principal a	ny other forbearance on the part of either party to the other, and the Surety, or either of them, their heirs, executors, any liability hereunder, notice to the Surety of any such eby waived.
	Principal
Signed, Sealed and Delivered in the Presence of:	Surety

MAINTENANCE AND GUARANTEE BOND

BOND NO	
KNOW ALL MEN BY THESE PRESENTS, That	
Address	
as Principal, and	
as Surety, are held and firmly bound unto the <u>City of Southfield and the Alliance of Communities</u> , Oakland County, Michigan, in the sum Dollars (\$	of be paid to entatives, our heirs,
Sealed with our seals and dated this day of A.D., 20	,
WHEREAS, the above named principal has entered into a certain written contract (the "C	Contract")
with day of, A.D., 20 wheeleft covenanted and agreed as follows, to wit:	erein said
NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that by and uncontract, the above named Principal has agreed with	
that for a two years from the date of final acceptance by the <u>City of Southfield and the Alliance of Communities</u> of all Project work identified in the Contract to keep in good order and repair any all the work done under said contract either by the Principal or his Subcontractors, or his suppliers, that may develop during said period due to improper materials, defective edworkmanship or arrangements, and any other work affected in making good such imperfectionals also be made good, all without expense to the <u>City of Southfield and the Alliance of Communities</u> , Michigan, by notice served in writing, either personally or by mail, on the Pricaddress)	of Rouge defect in material quipment, ons, shall of Rouge
Southfield	
Maintenance and Guarantee Bond	
OR their legal representatives, or successors, or on the surety at (address)	e date of aid notice, have the ry for the

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 City of Southfield and the Alliance of Rouge Communities. Michigan, may take immediate steps to repair or barricade such defects without notice to the contractor. In such accounting the said City of Southfield and the Alliance of Rouge Communities, Michigan, shall not be held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actually paid therefor shall be charged to the Principal or Surety. In this connection the judgment of the City of Southfield and the Alliance of Rouge Communities, Michigan, is final and conclusive. If the said Principal for a period of two years from the date of final acceptance by the City of Southfield and the Alliance of Rouge Communities of all Project work identified in the Contract shall keep work so constructed under said contract in good order and repair, and shall whenever notice is given as herein before specified, at once proceed to make repair as in said notice directed, or shall reimburse said City of Southfield and the Alliance of Rouge Communities, Michigan, 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 of servants. agents, or employees, in the prosecution of the work included in said contract, and from any and all claims arising under the Workman's Compensation Act, so called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the partie	es hereto have cause this instrur	ment to be executed by their
respective authorized officers this	day of	, A.D., 20
Signed, Sealed and Delivered in the Presence of:		
	Ву:	(LS)
	-	(LS)
		(LS)

Southfield Updated 12/96

EQUIPMENT QUESTIONNAIRE

Within **forty-eight (48) hours** after the receipt of bids, **the two low bidders** (if required of both), if requested, shall furnish the Engineer in the spaces provided the names of the manufacturers of equipment which he proposes to furnish. Upon award of a contract, the named equipment shall be furnished. Substitutions will be permitted only if named equipment does not meet the specifications or the manufacturer is unable to meet delivery requirements of the construction schedule.

Preliminary acceptance of equipment listed by manufacturer's name shall not in any way constitute a waiver of the specifications covering such equipment; final acceptance will be based on full conformity with the specifications covering the equipment.

Section	Equipment Item	Manufacturer
	• •	

CITY OF SOUTHFIELD & ALLIANCE OF ROUGE COMMUNITIES ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT NOTICE OF AWARD

TO:	DATE:
PROJECT DESCRIPTION:	
response to its Advertisement for BIDS due	submitted by you for the above described WORK in, 20, and Information for
Bidders.	
You are hereby notified that your BID has	s been accepted for items in the amount of \$
documents including the "ACKNOWLEDGEM CONTRACTOR". You must also furnish five (5) BOND, Labor and Material BOND, Maintenance	execute five (5) copies of the AGREEMENT and other ENT OF AUTHORITY" and "NOTICES TO THE copies of the required CONTRACTOR'S Performance and Guarantee or Material, Workmanship, and/or OND (if applicable) and Certificates of Insurance within to you.
from the date of this Notice, said OWNER will be	nish said BONDS and Insurances within ten (10) days be entitled to consider all your rights arising out of the d and as a forfeiture of your BID BOND. The OWNER sted by law.
You are required to return an acknowledged copy	of this NOTICE OF AWARD to the OWNER.
Dated this day of, 20	<u>) </u>
	By:
	By:
ACCEPTAI	NCE OF AWARD
	OF AWARD is hereby acknowledged.
By:	<u> </u>
this the, 20	_ .
By:	<u> </u>
Title:	

CITY OF SOUTHFIELD & ALLIANCE OF ROUGE COMMUNITIES ROUGE RIVER AREA OF CONCERN (AOC) HABITAT RESTORATION: TAMARACK CREEK STREAM AND WETLAND RESTORATION PROJECT

NOTICE TO PROCEED

TO:	DATE:	
	PROJECT:	
You are hereby notified to commence W	ORK in accordance with the Agreement dated	
, 20, on or before	, 20, and you are to complete the	
Substantial Completion WORK WITHIN	consecutive calendar days thereafter or no later than	
November 15, 2021 whichever is earlier. And	d Intermediate Final Completion of this Contract within 90	
calendar days after substantial completion.		
The date of completion of all FINAL CONTRAC	CT WORK is therefore no later than November 15, 2022.	
	By:	
	Title:	
ACCEP	PTANCE OF NOTICE	
Receipt of the above NOTICE	TO PROCEED is hereby acknowledged by:	
this the day of,		
Ву:		
Title:		

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY

The prospective participant certifies to the best of its knowledge and belief, that it and its principals:

- Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in transactions under federal nonprocurement programs by any federal department or agency.
- 2) Have not, within a three year period preceding the proposal, had one or more public transactions (federal, state, or local) terminated for cause or default, and
- 3) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (federal, state or local) and have not, within the three year period preceding the proposal, been convicted of or had civil judgment rendered against.
 - a) For the omission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public transaction (federal, state, or local) or a procurement contract under such a public transaction.
- b) For the violation of federal or state antitrust stature, including those proscribing price fixing between competitors, the allocation of customers between competitors, or bid rigging, or
- c) For the commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. \square 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.			
Name & Title of Authorized Representative			
Name of Participant Agency or Firm			
Signature of Authorized Representative	DATE		
☐ I am unable to certify to the above statements. Attached is my explanation.			

U.S. ENVIRONMENTAL PROTECTION AGENCY

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to federally assisted construction contracts and related subcontracts exceeding \$10,000 which are not exempt from the Equal Opportunity clause.)

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees, to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certification in his files.

Signature	Date
Name and Title of Signer	(Please Type)
Firm Name	

<u>NOTE:</u> The penalty for making false statements in offers is prescribed in 18.U.S.C. 1001.

NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS NONDISCRIMINATION IN EMPLOYMENT

ГО:
(Name of union or organization of workers)
The undersigned currently holds contract (s) with
(Name of Applicant)
nvolving funds or credit of the U.S. Government or (a) subcontract (s) with a prime contractor holding such contract(s).
You are advised that under the provisions of the above contract(s) or subcontract(s) and in accordance with Executive Order 11246, as amended, dated September 24, 1965, as amended, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, creed, or national origin. This obligation not to discriminate in employment includes, but is not limited o, the following:
HIRING, PLACEMENT, UPGRADING, TRANSFER, OR DEMOTION, RECRUITMENT,
ADVERTISING, OR SOLICITATION FOR EMPLOYMENT, TRAINING DURING
EMPLOYMENT, RATES OF PAY OR OTHER FORMS OF COMPENSATION, SELECTION
FOR TRAINING INCLUDING APPRENTICESHIP, LAYOFF OR TERMINATION.
This notice is furnished you pursuant to the provisions of the above contract(s) or subcontract(s) and Executive Order 11246, as amended.
Copies of this notice will be posted by the undersigned in conspicuous places available to employees or applicants for employment.
(Contractor or Subcontractor)
(Contractor of Subcontractor)
(Date)

MBE/WBE Good Faith Efforts Reporting

The CONTRACTOR to comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises contained in 40 CFR, Part 33. The CONTRACTOR shall agree to meet the following MBE/WBE fair share objectives/goals:

MBE: 10%	WBE: 7.5%
Business Enterp	ollow, document, and maintain documentation of the Good Faith Efforts, to ensure that Disadvantage brises (DBE) have the opportunity to participate in the project by increasing awareness of procurement efforts instructed in the grant award attached.
CONTRACTOR t	o complete and submit this form with it's initial bid and each application for payment requested.
Inital Bid	Pay Application:

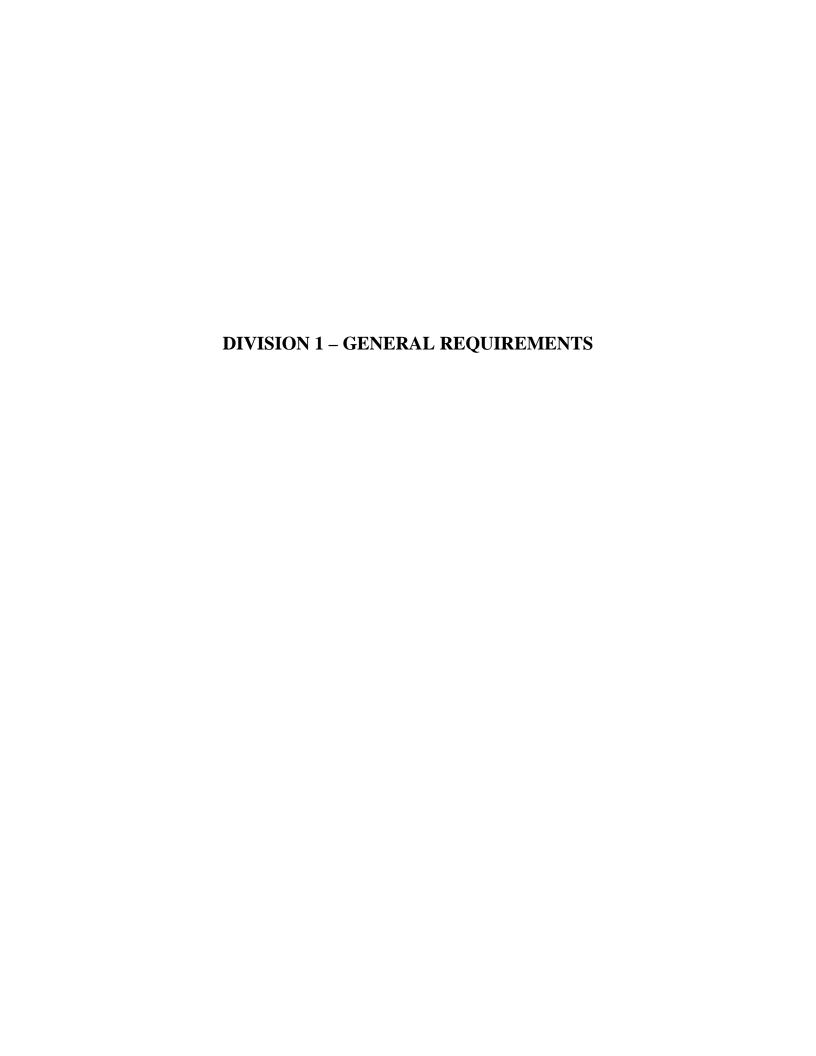
Date:___

Good Faith Efforts

(if this is for intial bid circle)

Company Name	MBE	WBE	Effort Made

Work Secured



SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

- A. The work of this Contract is located in and along Tamarack Creek in the City of Southfield, east of Tamarack Trail, south of 10 Mile Road, and west of Evergreen Road. The site can be accessed by Audrey Lane, which leads south off 10 Mile Road, west of Northwestern Highway.
- B. Work of this Contract spans multiple property parcels with varying owners. The parcel information is presented on the project Drawings. The main project contact will be the project "Owners": The City of Southfield and the Alliance of Rouge Communities and the "Engineer": Environmental Consulting & Technology, Inc.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to remove vegetation, complete demolition activities, establish access and staging, complete excavation and grading, establish new stream realignment, install habitat structures, complete revegetation and vegetation maintenance, restore the project site, and all other work required as presented in contract documents.
- B. All work shall be in accordance with the Michigan Department of Environment, Great Lakes and Environment (EGLE) permit and Michigan Department of Transportation (MDOT) permit issued for this project. Copies of the permits are included in the contract documents.
- C. The Work includes, but is not necessarily limited to, the following items.
 - 1. Mobilization
 - 2. Acquire a soil erosion and control permit from the local authority
 - 3. Acquire any other permits required for the project
 - 4. Development and Implementation of a Work Plan
 - 5. Development and Implementation of the following additional Technical Work Plans:
 - Health and Safety Plan
 - Soil Erosion and Sedimentation Control Plan
 - Traffic Control Plan
 - Access Plan
 - 6. Establish and maintain vertical and horizontal controls and construction staking to control lines and grades
 - 7. Clearing and grubbing of trees and brush with off-site disposal
 - 8. Establish temporary construction access

- 9. Establish staging areas
- 10. Soil Erosion and Sediment Control
- 11. Provide construction fencing and signage
- 12. Removal of existing culverts, fencing, road crossing, drain tile, and bridge abutments
- 13. Excavation and grading
- 14. Installation of floodplain benches
- 15. Habitat Structure installation
- 16. Basin and wetland improvements
- 17. Revegetation
- 18. Site restoration
- 19. Maintenance
- 20. Demobilization and closeout
- 21. All other items required to complete work as shown in the contract documents

D. Working Within a River System

- 1. The Contractor understands and acknowledges that the performance of the work is required within the Rouge River system and floodplain and that the Rouge River water level fluctuates. The Contractor understands and acknowledges that they have taken into account the potential for any water level changes that might occur in costing, scheduling, and feasibility of performing the contract work under the prevailing environmental conditions. Therefore, the Contractor acknowledges that any fluctuation in water levels, flooding, or inundation during/over the course of the project is likely and does not constitute a change in conditions or an unforeseen site condition.
- 2. The Contractor shall be fully aware of the Rouge River hydrology and current weather conditions so that work in progress can be secured and protected at all times, so that safe job site working conditions are maintained, and so that soil erosion is controlled in accordance with all applicable permits and environmental laws.
- 3. The Contractor acknowledges that delays in the start of, or completion of, work due to fluctuations in the water level throughout the duration of the project shall not constitute a change in conditions nor shall be a basis for any extension of time or damages. If the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reasons of changing water levels, storms, inundation or floods, the Contractor shall have no valid claim for damages, but shall in such case be entitled to an extension of time as the Engineer shall adjudge to be just and reasonable, provided that formal claim for an extension of time is made in writing by the Contractor within one week of the alleged delay.
- 4. The Engineer reserves the right to suspend work activities when it is in the best interest of the project to do so due to weather, flow, or water level conditions. The directive to suspend work activities shall be submitted to the Contractor in

- writing with justification. Such suspension shall not be basis for claim for additional cost but can be basis for extension of time.
- 5. The Contractor shall research available information and perform its own independent investigations as needed in an effort to fully understand environmental conditions associated with the project site. The Contractor shall understand the site conditions that will affect the cost, schedule, or performance of work in advance of starting such work.

1.03 WORK SEQUENCE

- A. The Contractor shall adhere to the following general construction sequence unless otherwise proposed by Contractor and approved by Engineer. Contractor shall propose a detailed construction sequence in the required Work Plan.
 - 1. Mobilize, acquire necessary permits, install temporary construction fencing, install silt fencing, install project signage, and establish construction staking.
 - 2. Establish access routes and staging areas.
 - 3. Clearing, grubbing, and tree removal as shown on the drawings.
 - 4. Management of invasive species.
 - 5. Removal of existing culvert, chain link fencing, stream crossing, drain tile, and bridge abutments as shown on the drawings.
 - 6. Excavation and grading for basin improvements.
 - 7. Excavation and grading for stream realignment and floodplain benches. Note: Contractor must maintain unaltered flow in the existing channel until the entire length of the new channel is constructed.
 - 8. Installation of floodplain benches and habitat structures including rootwad revetments, whole tree revetments, habitat log bundles, topsoil, native seed, erosion control blankets, and live stakes. After these activities have been completed along the entire length of new channel, flow may be routed into the new channel. The existing channel should be filled with spoils starting with the upstream end working down towards the downstream end.
 - 9. Complete revegetation.
 - 10. Demobilize including removal of equipment, excess materials, construction

debris, temporary fencing and gates, site cleaning and restoration, final seeding and restoration of areas disturbed by Contractor's demobilization, and removal of any traffic control devices/signage.

11. Maintenance.

1.04 CONTRACTOR'S USE OF PREMISES

- A. The CONTRACTOR shall restrict the stockpiling and storage to areas indicated on the plans or as directed by OWNER or ENGINEER.
- B. Access to the stream shall be as indicated on the plans off of 10 Mile Road. Routing of internal construction traffic shall be at the CONTRACTOR'S discretion providing all construction traffic remains inside the Limits of Work/Disturbance.
- C. The CONTRACTOR shall maintain his construction operations including areas for field offices, staging, and storage of materials and equipment within the contract limits at locations approved by OWNER.
- D. The CONTRACTOR shall provide protection and security, as needed, to protect equipment, materials, and work throughout duration of project.
- E. The CONTRACTOR shall limit the use of premises for the work and shall coordinate the work with other contractors and OWNER.
- F. The CONTRACTOR is to comply with requirements working within the MDOT Right-of-Way.
- G. The CONTRACTOR is to apply for and obtain any other permits required for the project.

1.05 COORDINATION

A. It shall be the responsibility of the CONTRACTOR to coordinate his operations and those of his subcontractors in such a manner so as to avoid interference and delays in the areas of common construction activities.

1.06 RIGHT-OF-WAY JURISDICTION

The CONTRACTOR shall secure any permits required by the agency having jurisdiction, shall abide by rules and regulations of each and pay all cost in connection with the permits. The CONTRACTOR shall pay for such permits, plan review, and inspection fees as the agencies may charge to ensure compliance with their requirements.

• Soil erosion and sedimentation control

- Traffic control
- Any other local permit required to complete work

1.08 WORKS HOURS

- A. 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. Regular working hours are defined as Monday through Friday, excluding holidays, between the hours of 7:00 a.m. and 6:00 p.m. Requests to work other than regular working hours shall be submitted to Engineer, in writing, for approval not less than 48 hours prior to any proposed additional daily working hours (including second and third shifts), weekend work, or scheduled extended work weeks.
- B. Holidays are defined as the following:
 - New Years Day
 - Memorial Day
 - Independence Day
 - Labor Day
 - Thanksgiving Day
 - Christmas Day

END OF SECTION

SECTION 01020

ALLOWANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

This section details specific elements included in the allowances identified in the Bid form and in Section 01025, Measurement and Payment. The allowances shall be administered in accordance with the provisions of the General Conditions of the Contract. The CONTRACTOR shall be required to coordinate this work with the agency firm involved and pay all costs the agency firm may charge in connection with this work. If a markup is allowed on the allowance item, it will be identified so under that specific allowance. Thereafter, if the actual price for this work is more or less than the allowance, the Contract Price shall be adjusted accordingly by Change Order. The CONTRACTOR shall be responsible for all coordination with the Agency involved and for the timely completion of the Work to fit his schedule. The CONTRACTOR shall not be allowed any additional compensation for the failure of the Agency involved to meet any schedule.

1.02 RELATED WORK

- A. Bid Form.
- B. General Conditions of the Contract.
- C. Section 01010, Summary of Work.
- D. Section 01025, Measurement and Payment.

1.03 SPECIFIC ALLOWANCE ITEMS

A. Unforeseen Site Conditions

The CONTRACTOR will be paid for additional work required due to differing and/or unforeseen site conditions. The payment for these additional work items will be made based on lump sum or time and materials prices negotiated between the CONTRACTOR and the OWNER. In the event that unforeseen physical conditions should be encountered on the Project, this allowance item shall be used to remedy the situation. The CONTRACTOR shall comply with all provisions of the Contract Documents when encountering and contending with an unforeseen physical condition. The ENGINEER may require the CONTRACTOR to furnish a written report from a certified professional supporting his proposed scope and method for handling the unforeseen physical condition.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

This section describes the method of measurement and basis of payment for all items of work included in the Contract and listed in the Bid Form. The CONTRACTOR shall provide all labor, material, tools, equipment and services required to complete the Work as specified and as indicated on the Drawings. THE OWNER ONLY WILL PAY FOR ITEMS ON THE BID FORM, AND WILL MAKE NO PAYMENT FOR ITEMS NOT INCLUDED ON THE BID FORM.

1.02 RELATED WORK

- A. Bid Form.
- B. Section 01010, Summary of Work.
- C. Section 01240, Value Engineering Incentive.
- D. Section 01310, Work Plan.

1.03 PAYMENT ITEMS

ITEM NO. 1 - Mobilization

Mobilization will be paid for at the Contract lump sum (LS) amount (not to exceed 5% of the total Contract Price). Price paid shall be payment in full for all labor, material, and equipment necessary for all preparatory work and operations, including but not limited to, the movement of personnel, equipment, supplies, and incidentals to the project site. Mobilization shall also include preconstruction costs, including permit fees and premiums for insurance and bonds, exclusive of bidding costs, which are necessary direct costs to the project and are of a generalized nature rather than directly attributable to other pay items under this Contract. This pay item shall also include all costs associated with De-Mobilization. This pay item shall include:

- the establishment of construction facilities and temporary controls;
- the establishment of access up to the active work area;
- obtaining and permit fee for all necessary SESC and/or other permits required for construction;
- furnish and installation of granting agency sign as shown on Drawings and removal at project completion;
- preparation of work schedules and schedule-of-values, and preparation of submittals;
- other work and operations which must be performed or for expenses incurred, prior to beginning work; and

all costs associated with De-Mobilization.

Payment for mobilization will be based upon the following schedule:

Partial Payment Schedule

Percentage of Total	Percentage of Bid Price	
Contract Price Earned	for Mobilization Allowed	
5	50	
10	75	
25	100	

ITEM NO. 2- Audio Visual Recording

Audio Visual Recording will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, materials and equipment required for the audiovisual tape recording of the project area prior to the start of Work.

ITEM NO. 3- Construction Staking/ Surveying

Construction Staking/ Surveying will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for establishing staking and maintaining staking in the project area as required to control grades and lines per Drawings. All other staking required shall be considered incidental and shall be included in the unit price.

ITEM NO. 4- Traffic Control

Traffic Control will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment for the traffic control required to complete work. Price paid shall include but is not limited to:

- labor, material and equipment for the traffic control on 10 Mile Road, as needed;
- preparation and submission of traffic control plan for approval prior to start of work in accordance with the Michigan Department of Transportation Manual on Uniform Traffic Control Devices;
- coordination with governing agency;
- abiding by any jurisdictional requirements; and
- all other items required to complete work.

ITEM NO. 5- Soil Erosion and Sedimentation Control

Soil Erosion and Sediment Control will be paid for at the Contract lump sum (L.S.) basis. Price paid shall be payment in full for all labor, material and equipment required to install and maintain soil erosion and sediment control measures to the extents shown on the Drawings and shall include, but is not limited to:

- compliance with permits;
- acquiring and delivering barrier material and controls to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- installing controls at locations shown on Drawings and as required to provide site control:
- maintaining controls throughout duration of project;

- removal of measures after completion of restoration project, and;
- all other items necessary to complete the work.

ITEM NO. 6- Staging and Access

Staging and Access will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for constructing and maintaining staging areas and construction access during project construction, and shall include but is not limited to:

- establishing access from 10 Mile Road along Audrey Lane as shown on the Drawings;
- establishing staging/storage areas;
- establishing access route between proposed slope and channel as shown on the Drawings;
- coordinating with ENGINEER to field verify location of access route to avoid large trees;
- installation of rock for access route and staging areas;
- coordination with installation of tributary culvert as shown on the Drawings;
- maintenance of access route and staging areas throughout the project;
- coordination with grading;
- complete removal of access and staging materials at the end of construction;
- restoration of staging and access areas to proposed conditions as shown on the Drawings; and
- all other necessary items to complete the work.

ITEM NO. 7- Temporary At-Grade Stream Crossing

Temporary At-Grade Stream Crossing will be paid for at the Contract lump sum (LS) amount. Price paid shall be payment in full for all labor, material and equipment required to install, maintain, and remove the crossing as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering limestone to the site;
- acquiring and delivering non-woven geotextile to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- installing non-woven geotextile and limestone at locations shown on Drawings;
- coordination with grading;
- removal of materials after project completion;
- restoration of crossing location to conditions shown on the Drawings; and
- all other items necessary to complete the work.

ITEM NO. 8- Tributary Culvert

Tributary Culvert will be paid for at the Contract lump sum (LS) amount. Price paid shall be payment in full for all labor, material, and equipment required to install tributary culvert for access as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installing culvert at location shown on Drawings;
- coordination with grading;
- removal of materials after project completion;
- restoration of culvert location to conditions shown on the Drawings; and
- all other items necessary to complete the work.

ITEM NO. 9- Water Control

Water Control will be paid for at the Contract lump sum (L.S.) basis. Price paid shall be payment in full for all labor, material and equipment required to complete the work for dewatering as shown in Drawings and shall include but is not limited to:

- dewatering area in and around proposed stream channel for construction of stream channel and floodplain benches;
- filtering of water from dewatering activities prior to release into Tamarack Creek;
- maintenance of separation between existing stream channel and proposed stream channel prior to connection;
- removal of dewatering materials and water control materials at close of project; and
- all other items necessary to complete the work.

ITEM NO. 10- Tree Removal 6-12"

Tree Removal 6-12" will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for the removal of trees with a 6-12" diameter at breast height (DBH) as shown in Drawings and shall include but is not limited to:

- removal of existing trees with a 6-12" DBH at locations shown on the Drawings;
- stockpiling select trees and brush for use as habitat logs as approved by the ENGINEER;
- haul and disposal offsite for trees not to be reused on the project; and
- all other items necessary to complete the work.

ITEM NO. 11- Tree Removal >12"

Tree Removal >12" will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for the removal of trees with a greater than 12" diameter at breast height (DBH) as shown in Drawings and shall include but is not limited to:

- removal of existing trees with a >12" DBH at locations shown on the Drawings;
- stockpiling select trees for use as habitat logs as approved by the ENGINEER;
- haul and disposal offsite for trees not to be reused on the project; and
- all other items necessary to complete the work.

ITEM NO. 12- Bat Habitat Felling (after April 1, 2021)

Bat Habitat Felling (after April 1, 2021) will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees assessed, surveyed, felled and removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material, and equipment required for assessing, survey, felling, and removal of potential bat habitat trees. Price paid shall include, but is not limited to the following:

- Generate and provide protocol documentation to the Fish and Wildlife Service and gain approval;
- Conduct full assessment and survey protocol for potential bat habitat trees;
- Conduct felling and removal of existing trees;
- haul and disposal off-site; and
- all other items required to complete this work.

ITEM NO. 13- Clearing

Clearing will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurement of area cleared and approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required for clearing, grubbing, chipping, hauling, and offsite disposal. The cost of removing and for hauling and disposal of trees, brush and woody vegetation removed shall be included in the price.

ITEM NO. 14- Culvert Removal

Culvert Removal will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for removal of unconnected culvert as shown on the DRAWINGS, and shall include but is not limited to:

- removing culvert as shown on Drawings;
- disposal off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 15- Crossing Removal

Crossing Removal will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for removal of the triple barrel culverts beneath existing road crossing, and shall include but is not limited to:

- removing three culverts as shown on Drawings;
- drain tile removal as needed for crossing removal and grading;
- disposal of removed materials off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 16- Bridge Abutment Removal

Bridge Abutment Removal will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for removal of existing bridge abutments, and shall include but is not limited to:

- removing concrete abutments as shown on Drawings;
- disposal off-site as approved by ENGINEER; and
- all other necessary items to complete the work.

ITEM NO. 17- Fence Removal

Fence Removal will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material and equipment required for chain link fence removal as shown on the Drawings, and shall include but is not limited to:

- removal of chain link fencing and fence posts as shown on the Drawings;
- disposal of chain link fencing and fence posts off-site as approved by ENGINEER;
 and
- all other necessary items to complete the work.

ITEM NO. 18- Basin Excavation- Remove from Site

Basin Excavation-Remove from Site will be paid for at the Contract unit volume (C.Y.) price basis. Measurements shall be based on in field measurements of excavated area as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to perform excavation of basin and shall include but is not limited to:

• excavation of soil from basin to depths as shown on the Drawings (volume of plant matter is considered to be incidental);

- haul and dispose of excavated soil and plant matter legally off site; and
- all other items necessary to complete the work.

ITEM NO. 19 – Phragmites/ Cattail Treatment

Phragmites/ Cattail Treatment will be paid for at the Contract unit price basis acre (AC). Price paid shall be payment in full for all labor, material and equipment required for treatment of Phragmites in the areas as shown on Drawings and shall include but is not limited to:

- Acquire any permits or approvals to complete the work;
- Treatment of Phragmites in areas as shown on Drawings;
- all other items necessary to complete the work.

ITEM NO. 20- Floodplain Excavation- Remove from Site

Floodplain Excavation- Remove from Site will be paid for at the Contract unit volume (C.Y.) price basis. Measurements shall be based on in field measurements of excavated area as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to perform excavation for the proposed floodplain and channel and shall include but is not limited to:

- excavation to facilitate floodplain and channel construction to rough and final grades as shown on the Drawings;
- haul and dispose of excavated material legally off site; and
- all other items necessary to complete the work.

ITEM NO. 21- Floodplain Excavation- Use onsite

Floodplain Excavation- Use onsite will be paid for at the Contract unit volume (C.Y.) price basis. Measurements shall be based on in field measurements of excavated area as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to perform excavation for the proposed floodplain and channel and shall include but is not limited to:

- excavation to facilitate floodplain and channel construction to rough and final grades as shown on the Drawings;
- stockpiling of topsoil for placement 4" below final grades;
- all other items necessary to complete the work.

ITEM NO. 22- Basin Clean Fill

Basin Clean Fill will be paid for at the Contract unit volume (C.Y.) price basis. Measurement shall be based on in field measurements of installed material as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install clean fill in basin as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering fill to the site;
- acquiring approval of delivered material from ENGINEER prior to installation;
- installing fill in basin at locations shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 23- At-Grade Riffle

At-Grade Riffles will be paid for at the Contract unit price (E.A.) basis. Price paid shall be payment installation of riffle structures, including but not limited to;

- acquiring and delivering limestone to site;
- construction of riffles as shown on Drawings;

- coordination with grading; and
- all other items necessary to complete this item.

ITEM NO. 24- Whole Tree Revetment

Whole Tree Revetment will be paid for at the Contract unit price (L.F.) basis. Measurement shall be based on count of installed linear feet of revetment installation along bank approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install whole tree revetment as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering anchoring materials to the site;
- moving ENGINEER approved on-site materials to the installation locations;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to structure as shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 25- Scour Pool Log

Scour Pool Log will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on count of installed structures and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install scour pool log as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering anchoring materials to the site;
- moving ENGINEER approved on-site materials to the installation locations;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to structure as shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 26- Woody Habitat

Woody Habitat will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on count of installed structures and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install woody habitat as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering anchoring materials to the site;
- moving ENGINEER approved on-site materials to the installation locations or acquiring and delivering woody materials to the site;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to structure as shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 27- Staggered Wing Logs

Staggered Wing Logs will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on count of installed structures and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install staggered wing logs as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- moving ENGINEER approved on-site materials to the installation locations or acquiring and delivering woody materials to the site;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to install the structure as shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 28- Horizontal Log Sill

Horizontal Log Sill will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on count of installed structures and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install horizontal log sill as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering anchoring materials to the site;
- moving ENGINEER approved on-site materials to the installation locations or acquiring and delivering woody materials to the site;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to structure as shown on Drawings;
- installation of bolts or fasteners;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 29- Rootwad Revetment

Rootwad Revetment will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on count of installed structures and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install rootwad revetment as a part of various in-stream structures as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering boulder materials to the site;
- moving ENGINEER approved on-site materials to the installation locations or acquiring and delivering woody materials to the site;
- installing at approximate locations shown on Drawings or as directed by ENGINEER;
- coordination with ENGINEER for structure installation approval;
- any earthwork or preparation necessary to structure as shown on Drawings;
- coordination with grading;
- installation of footer log, root wad logs, and boulders; and
- all other items necessary to complete the work.

ITEM NO. 30- Topsoil

Topsoil will be paid for at the Contract unit volume (C.Y.) price basis. Measurement shall be based on in field measurements of installed material as approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install topsoil as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering topsoil to the site;
- acquiring approval of delivered material from ENGINEER prior to installation;
- installing topsoil at locations shown on Drawings;
- coordination with grading; and
- all other items necessary to complete the work.

ITEM NO. 31- Wetland Basin Erosion Control Blanket NAG S75BN

Wetland Basin Erosion Control Blanket: NAG S75BN will be paid for at the Contract unit area (S.Y.) price basis. Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install erosion control blanket to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation over specified areas according to the manufacturer's instructions including appropriate overlaps and grade tie-ins;
- providing and installing stapling according to manufacturer's instructions; and
- all other items necessary to complete the work.

ITEM NO. 32- Wetland Basin Emergent Wetland Seed Mix

Wetland Basin Emergent Wetland Seed Mix will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed the basin to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- application of specified seed mix within the correct zones;
- application of specified seed mix at the specified seeding rates;
- coordination with grading, topsoil placement, erosion control blanket installation, and vegetation maintenance;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 33- Floodplain Bench Erosion Control Blanket C700BN

Floodplain Bench Erosion Control Blanket C700BN will be paid for at the Contract unit area (S.Y.) price basis. Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install erosion control blanket to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation over specified areas according to the manufacturer's instructions including appropriate overlaps and grade tie-ins;
- providing and installing stapling pattern "D", according to manufacturer's instructions;
 and
- all other items necessary to complete the work

ITEM NO. 34- Floodplain Bench Forested Wetland Seed Mix

Floodplain Bench Forested Wetland Mix will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed the floodplain benches to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- application of specified seed mix within the correct zones;
- application of specified seed mix at the specified seeding rates;
- coordination with grading, topsoil placement, and erosion control blanket installation and vegetation maintenance;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 35- Floodplain Slopes Erosion Control Blanket C125 BN

Floodplain Slopes Erosion Control Blanket C125BN will be paid for at the Contract unit area (S.Y.) price basis. Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install erosion control blanket to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation over specified areas according to the manufacturer's instructions including appropriate overlaps and grade tie-ins;
- providing and installing stapling pattern "D" according to manufacturer's instructions; and
- all other items necessary to complete the work.

ITEM NO. 36- Floodplain Slopes Mesic Woodland Seed Mix

Floodplain Slopes Mesic Woodland Seed Mix will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed the floodplain side slopes to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- application of specified seed mix within the correct zones;
- application of specified seed mix at the specified seeding rates;
- coordination with grading, topsoil placement, erosion control blanket installation, vegetation maintenance;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 37- Disturbed Upland Erosion Control Blanket NAG S75BN

Disturbed Upland Erosion Control Blanket NAG S75BN will be paid for at the Contract unit area (S.Y.) price basis. Measurement shall be based on in field measurements of installed materials. Price paid shall be payment in full for all labor, material and equipment required to install erosion control blanket to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering materials to the site;
- installation over specified areas according to the manufacturer's instructions including

appropriate overlaps and grade tie-ins;

- providing and installing stapling according to manufacturer's instructions; and
- all other items necessary to complete the work.

ITEM NO. 38- Disturbed Upland MDOT THM Mix

Disturbed Upland MDOT THM Mix will be paid for at the Contract unit area (A.C.) price basis. Measurement shall be based on in field measurements of area of installed materials. Price paid shall be payment in full for all labor, material and equipment required to seed disturbed upland areas to the extent shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering seed mix to the site;
- application of specified seed mix within the correct zones;
- application of specified seed mix at the specified seeding rates;
- coordination with grading, topsoil placement, erosion control blanket installation, and vegetation maintenance;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 39- Live Stakes

Live Stakes will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on Contract Drawings and installation approved by the ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install live stakes adjacent to the stream channel at the spacing and to the extents shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering live stakes to the site;
- acquiring approval of delivered stock from the ENGINEER prior to installation;
- acquiring approval for alternate species from the ENGINEER prior to installation;
- installing live stakes at approximate spacing and locations shown on Drawings;
- installing live stakes using commonly accepted practices;
- 2-year warranty; and
- all other items necessary to complete work.

ITEM NO. 40- Shrubs

Shrubs will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on the count of installed shrubs and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install shrubs as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering shrubs to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- acquiring approval for alternate species from ENGINEER prior to installation;
- installing shrubs at approximate locations shown on Drawings;
- installing shrubs using commonly accepted horticultural practices;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 41- Trees

Trees will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on

the count of installed trees and installation approved by ENGINEER. Price paid shall be payment in full for all labor, material and equipment required to install trees as shown on the Drawings and shall include, but is not limited to:

- acquiring and delivering trees to the site;
- acquiring approval of delivered stock from ENGINEER prior to installation;
- acquiring approval for alternate species from ENGINEER prior to installation;
- installing trees at approximate locations shown on Drawings
- installing trees using commonly accepted horticultural practices;
- coordination with grading, topsoil placement, erosion control blanket installation; and vegetation maintenance;
- 2-year warranty; and
- all other items necessary to complete the work.

ITEM NO. 42- Fence Replacement

Fence Replacement will be paid for at the Contract unit length (L.F.) amount. Price paid shall be payment in full for all labor, material and equipment required to install chain link fence as shown on the Drawings, and shall include but is not limited to:

- acquiring and delivering chain link fencing and fence posts to the site;
- installation of chain link fencing and fence posts as shown on the Drawings; and
- all other necessary items to complete the work.

ITEM NO. 43- Site Restoration

Site Restoration shall be paid for on a Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required to perform completion of site restoration within the Limits of Work/Disturbance shown on the Drawings or as directed by the ENGINEER and shall include, but is not limited to:

- removal and restoration of temporary access road through wetland as directed by ENGINEER;
- restoration of any damaged utilities;
- restoration of any other structures;
- restoration of areas used for access and staging;
- restoration of vegetated areas to original grade and existing vegetation types;
- placement of blown and crimped straw, erosion control blanket S75BN, or hydromulch in areas used for access and staging to facilitate restoration of existing vegetation types; and
- all other items necessary to complete the work.

ITEM NO. 44- As-Built Survey and Drawings

As-Built Survey and Drawings will be paid for at the Contract lump sum (L.S.) amount. Price paid shall be payment in full for all labor, material and equipment required for the providing an as-built survey and certified as-built documents of the project following the completion of Work. As-built documents shall include 1 copy of marked up field drawings, 3 copies of certified as-built drawings by a professional surveyor, and 1 copy digital AutoCAD file containing as-built survey data. The base survey will be provided to the Contractor by the ENGINEER.

ITEM NO. 45- Vegetation Maintenance

Vegetation Maintenance will be paid for at the Contract unit price (MON) amount. Price paid shall be payment in full for all labor, material, and equipment required for remedying

conditions during the growing season and shall include, but is not limited to:

- watering as required by site conditions and specifications and maintenance required for revegetation during extent of project;
- weeding and maintenance at a minimum once a month during growing seasons;
- invasive species removal; and
- all other items necessary to complete the work.

ALLOWANCES

ITEM NO. 46- Unforeseen Site Conditions

Unforeseen Conditions will be paid for at the Contract lump sum (L.S.) amount after the Work has been authorized by the ENGINEER. This may include one individual work item or a collection of items at a negotiated price. This may include one individual occurrence or multiple occurrences. Price paid shall be payment in full for all labor, material, and equipment required for remedying the conditions and shall be based upon an agreement negotiated and approved price prior to beginning this Work.

ALTERNATES

A-1 ALTERNATE 1- Bat Habitat Felling (Before April 1, 2021)

This item is an alternate to ITEM 12 and will be used if felling of bat habitat tree felling can occur prior to April 1, 2021. Bat Habitat Felling (Before April 1, 2021) will be paid for at the Contract unit price (E.A.) basis. Measurement shall be based on in field count of trees felled and removed as approved by ENGINEER. Price paid shall be payment in full for all labor, material, and equipment required for felling potential habitat removal trees prior to April 1, 2021, and removal (which can occur at any time). Price paid shall include, but is not limited to the following:

- felling of existing potential bat habitat trees prior to April 1, 2021;
- removal of felled trees and disposal off-site, or stockpiled for habitat structures as approved by the ENGINEER (note, removal can occur at any time); and
- all other items required to complete this work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. All progress payments shall conform with the General conditions.
- B. The CONTRACTOR shall submit draft Applications for Payment to the ENGINEER one week prior to final submittal for review along with a draft schedule
- C. Applications for Payment shall be consistent with previous applications and payments as certified by the ENGINEER and paid for by the OWNER.
- D. Payment Application Forms: Use form for Applications for Payment as approved by the ENGINEER in advance.
- E. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- F. After approval of draft, submit and three executed original copies of each Application for Payment to the ENGINEER.
- G. Administrative actions and submittals that must precede or coincide with submittal of the final application for payment shall be in accordance with the Contract Documents.
- H. Finalized Application for Payments packages shall include:
 - 1. Application for Payment, notarized and executed;
 - 2. As used, running sub-line items for Unforeseen Allowance Line;
 - 3. Invoices for on-site stored materials;
 - 4. Invoices, documentation and proof of insurance for off-site stored materials;
 - 5. Invoices for payment under Allowance items where contractor is reimbursed for actual cost of invoice plus 5%;
 - 6. Contractor Declaration;
 - 7. Waiver of Lien from all subcontractors, sub-subcontractors and suppliers;
 - 8. Completed MBE/WBE form;
 - 9. Updated schedule.

1.02 RELATED WORK

- A. Bid Form.
- B. General Conditions.
- C. Supplementary Conditions.
- D. Section 01310, Work Plan.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

COORDINATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall coordinate work under this Contract with operation and maintenance activities carried out by OWNER.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01300, Submittals.
- C. Section 01310, Work Plan.
- D. Section 01700, Contract Closeout.

1.03 GENERAL PROVISIONS

- A. Cooperate with OWNER in the use of the site for parking, storage areas, and traffic.
- B. During construction, coordinate use of site and facilities through the ENGINEER.
- C. Comply with the ENGINEER's procedures for Project communications, submittals, reports and records, schedules, and coordination drawings.
- D. Comply with instructions of OWNER for use of temporary utilities.
- E. Coordinate scheduling, and submittals, to assure efficient and orderly sequence of the Work.
- F. Coordinate sequence of Work to accommodate OWNER occupancy.
- G. In addition to progress meetings specified in Section 01200, hold coordination meetings and pre-construction conferences with personnel and subcontractors to assure coordination of the Work. The ENGINEER shall be informed of these meetings in advance.
- H. Assemble and coordinate closeout submittals specified in Section 01700.

PART 2 PRODUCTS (NOT USED)

PROJECT MEETINGS

PART 1		GENERAL	
1.01		SCOPE OF WORK	
	A.	Preconstruction conference.	
	B.	Progress meetings.	
1.02		RELATED WORK	
	A.	General Conditions: Contractor's use of site; safety procedures; payments; claims; change orders.	
	B.	Section 01010, Summary of Work	
	C.	Section 01300, Submittals.	
	D.	Section 01310, Work Plan.	
	E.	Section 01400, Quality Control.	
	F.	Section 01500, Construction Facilities and Temporary Controls.	
	G.	Section 01570, Traffic Control	
	Н.	Section 01600, Delivery, Storage, and Handling.	
1.03		PRECONSTRUCTION CONFERENCE	
	A.	Following the Notice of Award, the ENGINEER will schedule a preconstruction conference.	
1.04		PROGRESS MEETINGS	
	A.	Weekly progress meetings will be scheduled.	
	В.	Attendance (as needed): CONTRACTOR, project superintendent, subcontractors, and suppliers, appropriate to agenda; the OWNER, his representatives, and consultants as appropriate.	

1.

2.

3.

C.

Minimum Agenda:

Progress of Work in relation to schedule.

CONTRACTOR's marked-up schedule.

CONTRACTOR's payment estimate.

- 4. Work progress and performance.
- 5. Field observations, problems, and conflicts.
- 6. Off-site and on-site fabrications, inspections and delivery schedules.
- 7. Corrective measures and procedures to regain projected schedule.
- 8. Planned progress and schedule during succeeding work period.
- 9. Coordination of schedules.
- 10. Submittals required.
- 11. Maintenance of quality standards.
- 12. Proposed changes; effect on construction schedule.
- Any other appropriate items or subjects which require the attention and attendance of the CONTRACTOR with regard to the progress of the Work.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

VALUE ENGINEERING INCENTIVE

PART 1 GENERAL

1.01 DESCRIPTION

This Section defines a Value Engineering Incentive Proposal and establishes procedures and policies for sharing Value Engineering savings between the OWNER and the CONTRACTOR.

1.0.2 DEFINITIONS

A. Value Engineering Incentive Proposal: A formally written Proposal from the CONTRACTOR for a change in scope, materials, methods, techniques, procedures, etc., during the construction of a Project, which results in a savings to the Project while maintaining the design intent, function, serviceability, durability, longevity, etc.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. The Value Engineering Incentive Proposal must result in a net capital cost reduction while causing no increase in the total life cycle cost of the Project (i.e., shall not increase overall operation and maintenance costs or decrease life of project).
- B. The function, reliability, and safety of the Project shall be maintained.
- C. The proposed change shall not result in any Contract rebidding.
- D. The proposed change shall be in compliance with all applicable laws, regulations, ordinances, and permits of all local, federal, and state agencies.
- E. The proposed change shall result in a gross savings of at least \$10,000.00 to be considered for Value Engineering Incentive sharing.

3.02 SUBMITTING PROPOSAL

The Value Engineering Incentive Proposal shall contain all pertinent information and supporting documentation for evaluation by the ENGINEER. As a minimum, the following information shall be included:

A. Name of CONTRACTOR, subcontractors, suppliers, or others associated with the proposed change and preparation of the Value Engineering Incentive Proposal.

- B. A detailed description with plans and specifications of the present design and proposed changes. Designs shall be signed and sealed by a registered Professional Engineer.
- C. Clear identification of any advantages and disadvantages for each change proposal.
- D. A detailed procedure and schedule for implementing the proposed change. This shall include confirmation from suppliers of availability and proposed delivery dates of materials and equipment.
- E. All necessary Contract Change Order information and significant dates for implementation.
- F. A detailed listing of Project construction costs before (original construction cost as bid) and after the proposed change, broken down by trade and/or subcontractor. Markups for overhead and profit shall be equivalent to the markups included in the original Proposal submitted with the CONTRACTORs bid unless such markups are not in accordance with the Conditions of the Contract. The original as bid construction cost and the new construction cost shall be supported. Construction costs shall include, as a minimum, the following:
 - 1. Detailed listing of quantities of materials and equipment
 - 2. Unit prices of materials and equipment
 - 3. Labor hours and hourly rates for installation labor
 - 4. Detailed listing of equipment and equipment rates used in the installation
 - 5. Subcontractor and CONTRACTOR markups
 - 6. Permit fees and license costs
 - 7. Miscellaneous costs not included above with supporting documentation
- G. Operation and maintenance costs before and after the Value Engineering Change.
- H. Other costs for implementing the proposed change not included above.
- I. Other data required for funding approvals as may be required by funding agencies.
- J. Time required for executing the proposed change including time savings or time extensions if required.

3.03 REVIEW OF VALUE ENGINEERING CHANGE PROPOSAL

The OWNER may modify, accept, or reject the proposed change. However, if the proposed change is modified or is not acted upon within the time frame specified in the Value Engineering Incentive Proposal, the CONTRACTOR may withdraw in whole or in part, the Value Engineering Incentive Proposal. In any event, the OWNER and ENGINEER shall not be liable for any costs associated with development and submittal of the Value Engineering Incentive Proposal.

A. The ENGINEER shall review all aspects of the Value Engineering Incentive Proposal and make a separate analysis of the costs, benefits, disadvantages, maintenance and operating costs, and life cycle costs based upon the design intent. The ENGINEER

shall then make a recommendation, to the OWNER, based upon this review. Such recommendation shall accept or reject the Value Engineering Incentive Proposal in whole or in part, or recommend modifications to the proposal, accompanied by such supporting documentation as is necessary to support the recommendation.

- B. The OWNER shall accept or reject the Value Engineering Incentive Proposal in whole or in part or offer modifications to the proposal for consideration of the CONTRACTOR.
- C. The CONTRACTOR shall accept or reject the Value Engineering Incentive Proposal as accepted by the OWNER or may counteroffer modifications to the proposal for the ENGINEER's review and OWNER's consideration.
- D. The ENGINEER shall record all costs for review on a time and materials basis. Such costs shall be deducted from the Value Engineering savings.

3.04 ACCEPTANCE OF VALUE ENGINEERING INCENTIVE PROPOSAL

Upon mutual acceptance of the Value Engineering Incentive Proposal by the OWNER and CONTRACTOR, the CONTRACTOR will share in the net savings based upon the following formula.

- \$ (initial construction cost)
- -\$ (revised construction cost)
- \$ (Value Engineering Savings) = (\$10,000.00 or greater)
- -\$ (ENGINEER's review costs)
- \$ (net Value Engineering Savings)
- \$ (net Value Engineering Savings) x 50% = CONTRACTOR's share in savings

When approved, the CONTRACTOR's share in the Value Engineering Incentive savings shall be reimbursed by an approved Change Order which shall also be authorization to proceed with the proposed change.

SUBMITTALS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the requirements for the following submittals: Shop Drawings, Product Data, Samples, Construction Photographs, and Construction and Shop Drawing Submittal Schedules.
- B. All submittals shall be clearly identified by reference to Section Specification number, Paragraph, and Drawing number as applicable. Submittals shall be clear and legible and of sufficient size for clear presentation of data.

1.02 RELATED WORK

- A. Section 01200, Project Meetings.
- B. Section 01310, Work Plan.
- C. Section 01330, Construction Staking.
- D. Section 01400, Quality Control
- E. Section 01540, Health and Safety Plan
- F. Section 01570, Traffic Control.
- G. Section 01700, Contract Closeout.
- H. Section 02220, Soil Erosion
- I. Section 02300, Earthwork
- J. Section 02622, Erosion Control Blankets
- K. Section 02930, Landscaping

1.03 SHOP DRAWINGS, PRODUCT DATA, SAMPLES, TECHNICAL WORK PLANS

A. Shop Drawings

- 1. Shop drawings as specified in individual Specification Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.
- 2. All shop drawings submitted by subcontractors for approval shall be sent directly to the CONTRACTOR for checking. The CONTRACTOR shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 3. Check all subcontractor's shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Drawings and related Specification Sections. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before

submission thereof.

4. All details on shop drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the shop drawings before being submitted for approval.

B. Product Data

1. Product data as specified in individual Specification Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

- 1. Samples specified in individual Specification Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the ENGINEER or OWNER for independent inspection and testing, as applicable to the work.
- D. The following Technical Work Plans shall be developed by the CONTRACTOR prior to initiating the Work covered by the Technical Work Plans. The Plans shall be submitted for review and approval and shall include: descriptions of CONTRACTOR's proposed means and methods; materials, products, and equipment data; assumptions, design data, and calculations; sketches, and fabrication and working drawings, sequence of work; and contingency plans. All designs and calculations included in the Plans shall be stamped by a Professional Engineer registered in the State of Michigan.
 - 1. Work Plan
 - 2. Soil Erosion and Sedimentation Control Plan
 - 3. Traffic Control Plan
 - 4. Revegetation Plan

1.04 CONTRACTOR'S RESPONSIBILITIES

- A. The CONTRACTOR shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 - 1. Field measurements

- 2. Field construction criteria
- 3. Catalog numbers and similar data
- 4. Conformance with related Sections
- B. Each shop drawing, sample and product data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement including the CONTRACTOR's company name and signed by the CONTRACTOR: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. The CONTRACTOR shall provide to the Resident Project Representative a copy of each submittal transmittal sheet for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the ENGINEER.
- C. Project work, materials, fabrication, and installation shall conform to approved shop drawings, applicable samples, and product data.

1.05 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work.
- B. Each submittal, appropriately coded, will be returned within 30 calendar days following receipt of submittal by the ENGINEER.
- C. Any delays due to submittals, revisions, and/or resubmittals shall be borne by the Contractor and will not be cause for extension of time nor additional payment. The Contractor shall submit all submittals with sufficient time in advance of construction activities to avoid any delays.
- D. Number of submittals required:
 - 1. Shop Drawings: Three copies.
 - 2. Product Data: Three copies.
 - 3. Samples: Submit the number stated in the respective Specification Sections.
- E. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The Project title and number.

- 3. Contractor identification and certification.
- 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
- 5. Identification of the product, with the Specification Section number, page and paragraph(s).
- 6. Field dimensions, clearly identified as such.
- 7. Relation to adjacent or critical features of the Work or materials.
- 8. Applicable standards (such as ASTM, MDOT, or Federal Standards numbers.)
- 9. Identification of deviations from Contract Documents.
- 10. Identification of revisions on resubmittals.
- 11. A blank space suitably sized for ENGINEER stamp.
- 1.06 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, TECHNICAL WORK PLANS WORKING DRAWINGS AND SAMPLES
 - A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;
 - 3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.
 - B. The CONTRACTOR remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
 - C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Total Contract Price or Contract Time, the ENGINEER may return the reviewed drawings without noting an exception.
 - D. Submittals will be returned/noted to the CONTRACTOR as:
 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.

- "APPROVED AS NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
- "APPROVED AS NOTED/RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within [15] calendar days of the date of the ENGINEER's transmittal requiring the resubmittal.
- "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.
- "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the CONTRACTOR.
- E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the CONTRACTOR shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.
- F. Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR and will be considered "Not Approved" until resubmitted. The ENGINEER may at his/her option provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete.
- G. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give written notice thereof to the ENGINEER at least 7 working days prior to release for manufacture.
- H. When the shop drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

1.07 DISTRIBUTION

A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the ENGINEER.

Number of copies shall be as directed by the ENGINEER but shall not exceed six (6).

1.08 SHOP DRAWING SUBMITTAL SCHEDULE

- A. Provide shop drawing submittal schedule required in Specification Section 01310, Work Plan.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

WORK PLAN

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall submit a Work Plan demonstrating fulfillment of all Contract requirements. The Work Plan shall be kept up to date in accordance with the requirements of this Section. The Work Plan shall be utilized for planning, scheduling, coordinating, and monitoring Work under this Contract, including but not limited to all activities of subcontractors, equipment vendors, suppliers, and approvals of the OWNER and of other agencies. The Work Plan, when approved, shall be jointly used by OWNER, ENGINEER, and CONTRACTOR to substantiate or mitigate the impact of delays and Change Orders and measure progress of the CONTRACTOR.
- B. This Specification also requires the CONTRACTOR to associate the Schedule of Values with the Work Plan; that the CONTRACTOR use the Work Plan to assist the OWNER in evaluating progress of the Work and in making payments for Work performed; and that the CONTRACTOR prepare record drawings and data showing how the Work is being performed as to sequencing, timing, and rate of progress.

1.02 RELATED WORK

- A. General Conditions of the Contract.
- B. Section 01010, Summary of Work.
- C. Section 01027, Applications for Payment.
- D. Section 01040, Coordination.
- E. Section 01200, Project Meetings.
- F. Section 01300, Submittals.

1.03 GENERAL PROVISIONS FOR DEVELOPMENT OF A WORK PLAN

- A. The CONTRACTOR shall prepare a detailed Work Plan consisting of Schedule, Schedule of Values (SOV), and a Detailed Cost Breakdown (DCB). In addition, the work plan shall include a detailed narrative, sketches, product data and other information describing details of the CONTRACTOR's means and methods to complete the work.
- B. All costs incurred by the CONTRACTOR to correctly develop, implement, coordinate, and administer the Work Plan shall be borne by the CONTRACTOR and shall be included in his

- bid and become part of his Contract. The CONTRACTOR shall be responsible for all his subcontractors and suppliers in the implementation of the Work Plan.
- C. The CONTRACTOR shall designate, within one week after Notice to Proceed, an authorized representative of his firm who shall be responsible for the development and maintenance of the Work Plan. This representative of the CONTRACTOR shall have direct project control and complete authority to act on behalf of the CONTRACTOR in fulfilling the commitments shown in the Work Plan. This representative shall not be changed during the term of this Contract without the prior consent of the ENGINEER unless he or she shall cease to be in the employ of the CONTRACTOR.
- D. The ENGINEER will be the final judge as to the acceptability of the Work Plan and is empowered under the terms of the Contract to call upon the CONTRACTOR to reschedule his Work and remedy the functioning of the systems whenever deficiencies of whatever nature occur during the course of the Work. Refusal by the CONTRACTOR to maintain the progress of his work consistent with the Schedule included in the Work Plan shall be interpreted as an obvious delay of the Contract by the CONTRACTOR. Adherence to the established Schedule shall be obligatory upon the CONTRACTOR and his subcontractors for the Work under this Contract.
- E. The ENGINEER's review of the CONTRACTOR's Schedules will be only for conformance with the Contract Times in the Agreement, and those sequences of Work indicated in or required by the Contract Documents. The ENGINEER's review, comments, and exceptions taken, if any, shall not, extend to, nor will constitute directions nor approval of, the means, methods, techniques, sequences, or procedures of construction or safety precautions, the corrections of which shall be the sole responsibility of the CONTRACTOR.
- F. The ENGINEER's approval of the CONTRACTOR's Work Plan shall not relieve the CONTRACTOR of any responsibilities otherwise designated under the Contract. Approval of a Schedule with undisclosed variations or errors such as omitted Work or erroneous sequences will not relieve the CONTRACTOR from completing the omitted or impacted Work within the Contract Time(s) at no change in the Contract Price.

1.04 SCHEDULE

- A. A Schedule representing all Work under this Contract and all interfaces required with each other contracts shall be prepared and submitted by the CONTRACTOR. This schedule shall show in sufficient detail the priority, sequencing and interdependence of activities and the sequence in which the Work is to be accomplished as planned by the CONTRACTOR to comply with the Contract Time(s), named allowances, and those sequences of Work indicated in or required by the Contract Documents. Each stage of Work shall be analyzed in sufficient detail by the CONTRACTOR to ensure reasonably accurate time durations. When completed, the Schedule shall represent the CONTRACTOR's own plan for the Project, consistent with Contract requirements.
- B. It shall be the CONTRACTOR's responsibility to ensure that all of his Work is described by the Schedule and that the schedules do correctly represent the sequence, means, methods,

techniques, and procedures for completing his Work. In preparing the Schedule, the CONTRACTOR shall:

- 1. Verify site conditions that may in any manner affect cost, progress, scheduling, performance, and furnishing of the Work.
- 2. Work with all major Subcontractors and Suppliers to obtain information on activities, sequencing, and activity durations for incorporation into the Schedule.
- 3. Obtain written interpretations from the ENGINEER as warranted.
- C. The Schedule shall show sufficient detail for Work activities to clearly identify, separately and individually, those factors that may in any manner affect the cost, schedule, progress, performance, and furnishing of the Work. At a minimum, the activity breakdown shall delineate the following:
 - 1. Work associated with the CONTRACTOR's installation, erection, and other field construction activities for the Contract as defined in Work Sequence in Specification Section 01010.
 - 2. Items pertaining to the approvals of regulatory agencies including for permits and approvals.
 - 3. The time required for the review and approval of shop drawings and schedules.
 - 4. All special Work sequences, schedule milestones, intermediate Contract Times, named allowances set forth in the Contract Documents.
- D. Activity durations shall be in calendar days and represent the CONTRACTOR's single best estimate based on the Work included and the resources planned for that activity.
- E. Supporting data shall be submitted in the form of a narrative and shall include:
 - 1. The status of the Schedule in terms of number of calendar days ahead or behind the Contract Time(s).
 - 2. The progress status (i.e., progress achieved versus that forecasted) for:
 - a. Activities designating accomplishment of Substantial Completion milestones.
 - b. Critical and other significant activities.
 - c. Work related to achieving milestones set forth the Work Sequencing indicated in or required by the Contract Documents.
 - 3. The assumptions made in incorporating Work related to pending or authorized Change Orders.

- 4. Actual or potential delays, including causes, the steps taken or anticipated to mitigate their impact and the anticipated effect on the Schedule as a whole.
- 5. Any significant changes in Schedule sequences, and their basis thereof.
- 6. OWNER and ENGINEER activities that become due over the next 2 months for CONTRACTOR to maintain the Schedule.
- 7. CONTRACTOR's responses to ENGINEER's comments raised in the review of the previous Schedule submittal.
- 8. Actions taken to address schedule non-compliance.
- F. Any float in the CONTRACTOR's approved schedule belongs to the project, not the CONTRACTOR. The CONTRACTOR shall not be entitled to additional compensation due to loss of float caused by weather; wet conditions, lack of surface or groundwater controls, high or ponded water in work areas, coordination or for any other reason.

1.05 SCHEDULE OF VALUES (SOV)

- A. The Schedule of Values shall be a tabulation of each activity of the Schedule listed and the associated cost of each activity. The cumulative cost of all activities shall equal the total Contract price. Overhead, profit, and the costs of bonds, insurance, for the entire project, shall be tabulated. Separate cost activities will be allowed for such items, as mobilization, insurance, and bonds only if specified the Special Notice to Bidders. Each Schedule of Values activity shall be cross-referenced to an item of Work in the Detailed Cost Breakdown.
- B. The cost of the individual items in the Detailed Cost Breakdown shall be equal to the sum of costs of the activities in the Schedule of Values related to that item. The Schedule of Values and the Detailed Cost Breakdown, once approved by the ENGINEER, shall become the basis for progress payments under this Contract and cannot thereafter be changed without the written approval of the ENGINEER.
- C. Identify Schedule of Values with:
 - 1. Title of Project and location.
 - 2. Project number.
 - 3. Name and Address of CONTRACTOR.
 - 4. Contract designation.
 - 5. Date of submission.
 - 6. Submission number.

- D. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- E. Identify each line item with the number and title of the respective major section of the specifications.
- F. For each major line item list subvalues of major products or operations under the item.
- G. For the various portions of the Work:
 - 1. Each item shall include a directly proportional amount of the CONTRACTOR's overhead and profit.
 - 2. For items on which progress payments will be requested for stored materials, break down the value into the cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the ENGINEER.

1.06 DETAILED COST BREAKDOWN (DCB)

A. The Detailed Cost Breakdown shall be a detailed tabulation of the unit price or lump sum bid. The breakdown will include, for each major operation to be performed under the Contract, the individual items of Work including quantities, unit prices, and total cost.

The sum of the total cost of the individual items shall be equal to the total Contract price.

1.07 COMPLETE WORK PLAN

- A. At the Pre-Construction Meeting, the CONTRACTOR shall deliver to the ENGINEER for review and acceptance, five (5) copies of the complete Schedule, section 1.04 herein.
- B. The ENGINEER will review the Schedule submittal and return it approved or disapproved within a period of ten (10) working days. If disapproved, the CONTRACTOR shall promptly make corrections and resubmit within ten (10) working days for the ENGINEER's action within the following ten (10) working days.
- C. The ENGINEER will review the Schedule of Values section 1.04 herein and return same, approved or disapproved, within a period of ten (10) working days. If disapproved, the CONTRACTOR shall promptly make revisions and resubmit within five (5) working days for the ENGINEER's action within five (5) working days.
- D. Pursuant to Article 14 of the General Conditions, acceptance by the ENGINEER of the Schedule of Values will be a condition of progress payments for the Work.

1.08 PAYMENT AND PROGRESS REPORTING

A. Pursuant to Section 01200 herein, the ENGINEER will schedule a monthly progress meeting between the ENGINEER and the CONTRACTOR.

- B. Five (5) working days prior to the scheduled monthly meeting, the CONTRACTOR will submit to the ENGINEER a "Marked-Up" Schedule, a "Marked-Up" Schedule of Values, and a Supporting Schedule Narrative, showing the anticipated status of each activity as of the schedule payment cut-off date. The "Marked-Up" Schedule shall be the latest version of the Schedule on which "Updates" and, where applicable, "Revisions" are graphically displayed. "Updates" are a graphic representation of the current Contract status, including completed activities, and remaining duration of those activities started but not completed as of the scheduled payment cutoff date. "Revisions" will be made when one or more of the following conditions occur, as determined by the ENGINEER, with the following effect:
 - 1. Progress falls behind schedule and monitoring becomes impractical.
 - 2. A Change Order significantly affects the Date of Substantial Completion of the sequence of activities. Change Order work for Change Orders that have not been issued are to be clearly notes as "proposed" or "pending". Change Order time shall be shown as "proposed" or "pending" until the Change Order is issued. The Cost of the Change Order will be shown as \$0 on the Schedule of Values until the Change Order is issued.
 - 3. The progress of the Work, or the planned sequence of the Work, does not conform to the CONTRACTOR's current Schedule. If the CONTRACTOR purposes change or revise his method of operating and it affects the approved Schedule, he shall notify the ENGINEER in writing and specifically delineate the reasons for and nature of such changes and revisions. If the ENGINEER approves such changes/revisions, the CONTRACTOR shall revise and submit for further approval, without any additional cost to the OWNER, all of the affected portions of the Schedule. The Schedule shall be revised by the CONTRACTOR only after prior written approval by the ENGINEER of the proposed changes or revisions. Revisions may consist of changing portions of approved activities or other revisions as approved by the ENGINEER.
 - 4. The completion of any activity, whether or not critical to performance of the Work, falls more than 100 percent behind its prior approved duration. The CONTRACTOR shall prepare and submit for approval proposed revisions showing each such activities reflecting completed and uncompleted Work.
 - 5. The progress of the Work is significantly and adversely affected as a result of any of the events, conditions, circumstances, acts of neglect, or acts of omissions as provided in the General Conditions that are incorporated by reference herein. Under such conditions, the ENGINEER shall direct the CONTRACTOR to reschedule the Work and/or the Date of Substantial Completion to reflect such conditions and the CONTRACTOR shall revise his/her schedule accordingly. As a result of such conditions, the CONTRACTOR shall take all possible action to minimize any time delays and costs to the OWNER.
- C. If the CONTRACTOR refuses, fails, or neglects to provide the required Schedules or related

data pricing and Shop Drawings, and schedule recovery data:

- 1. The CONTRACTOR will be deemed not to have provided sufficient information to the ENGINEER upon which progress can be evaluated, and the ENGINEER may refuse to recommend the whole or part of any outstanding payment if, in the ENGINEER's opinion, it would be incorrect to make such representations to the OWNER. Further, the OWNER may refuse to make payments of those amounts recommended by the ENGINEER because of the CONTRACTOR's failure or refusal to provide the required Progress Schedule and related submittal data.
- 2. The ENGINEER may perform, or may hire a specialist to perform, the Schedule, analysis and those parts deemed to be lacking, inadequate, or insufficient. The cost for this extra work by the ENGINEER will be charged against any future progress payment due to the CONTRACTOR.
- D. At the monthly progress meeting a review of the current status of the Work and the progress during the monitoring period will be made utilizing the "Marked-Up" Schedule.
 - Modification of the "Marked-Up" Schedule may be made during the progress meeting if it is mutually agreed that these modifications will more accurately reflect actual Work status and progress.
- E. In the event of a dispute regarding the percentage of Work completed that the ENGINEER and the Contract cannot resolve at the monthly meeting, the ENGINEER will use his sole judgment in representing the quantity and fair value of the Work completed for those activities in dispute.
- F. After the monthly meeting, the ENGINEER will proceed processing the progress payment.
- G. Utilizing the information on the "Marked-Up" Schedule, the CONTRACTOR shall change the original or previous version of the Schedule. Changes to the Schedule shall be identified as Updates or Revisions numbered sequentially.
- H. Within five (5) working days after the monthly progress meeting, the CONTRACTOR shall transmit to the ENGINEER for approval, five (5) copies of the Updated or Revised Schedule as part of the "Update" submittal set(s). "Update" submittal sets shall consist of revised detailed Diagrams, Schedule of Values, all of the associated computer reports, and a Supporting Narrative. All Diagrams, Schedule of Values, and associated computer reports and Narratives submitted by the CONTRACTOR shall be consistent with the requirements of this Specification and shall reflect the current status as mutually agreed to at the monthly progress meeting.

1.09 SCHEDULE COMPLIANCE

A. Whenever it appears from the current monthly Schedule that delays have resulted so that the Date of Substantial Completion will not be achieved or whenever directed by the ENGINEER, the CONTRACTOR shall submit a written statement to the ENGINEER. This

statement shall describe the actions, activities, and steps he intends to take to remove, prevent, or arrest any delay in the approved schedule and, at no cost to the OWNER, the CONTRACTOR shall take one or more of the following actions:

- 1. Increase construction labor and manpower in such quantities and crafts that will substantially eliminate, in the ENGINEER's judgment, the delay to the Work.
- 2. Increase the number of working hours per shift; shifts per work day per week; the amount or type of construction equipment; or any appropriate combination of working hours, shift, or equipment that shall substantially eliminate, in the ENGINEER's judgment, the delay to the Work.
- 3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities including, but not limited to, such actions as overlapping of dependent activities, sequencing changes to accommodate increased activity concurrency, assignment of additional labor or equipment, shift or overtime Work, expediting of submittals or deliveries, or any combination of the foregoing, and comply with the revised schedule.
- B. If the CONTRACTOR refuses, fails, or neglects to submits written statement, pursuant to Paragraph A, above, the ENGINEER may direct the level of effort in labor and manpower, equipment, and Work schedule including, but not limited to, overtime, weekend, and holiday Work to be utilized or employed by the CONTRACTOR to remove, prevent, or arrest the delay to the critical path in the approved schedule. After notification by the ENGINEER, the CONTRACTOR shall promptly provide such level of effort in labor and manpower, equipment, and Work schedule at no additional cost or expense to the OWNER.

1.10 REVIEW OF SCHEDULES

- A. ENGINEER's review of Schedule submittals will be predicated on a CONTRACTOR's stamp of approval signed by the CONTRACTOR and the CONTRACTOR's subcontractors performing Work under an appropriate agreement with CONTRACTOR with subcontract price in excess of \$50,000.00. CONTRACTOR's stamp of approval on the Schedule shall constitute a representation to the OWNER that the CONTRACTOR has either determined or verified data on the Schedule, or assumes full responsibility for doing so, and that CONTRACTOR and his subcontractors have reviewed and coordinated the sequences shown in the Schedule with the requirements of the Work under the Contract Documents.
- B. The ENGINEER's review will not be intended to be for the purpose of determining the accuracy of other matters that may be contained in the Schedules. When the review of a Schedule results in a number of comments or exceptions taken, the ENGINEER does not warrant that these comments are inclusive of all variations, as it shall remain the responsibility of the CONTRACTOR to the requirements of the Contract Documents and to identify expressly any proposed variations.
- C. ENGINEER's review of the Schedules shall not relieve CONTRACTOR from responsibility for any variations from the Contract Documents unless CONTRACTOR has written by

means of a specific notice, called the ENGINEER's attention to each variation, and the ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompany the Schedules.

- D. ENGINEER's approval of the Schedules will not relieve the CONTRACTOR from responsibility for errors and omissions in the submittals or from responsibility for having complied with the provisions above. Approval of a Schedule with undisclosed variations or errors such as omitted Work or erroneous sequences will not relieve the CONTRACTOR from completing the omitted or impacted Work within the applicable Contract Time(s).
- E. If the CONTRACTOR considers any comment indicated on the returned Schedules to constitute an order to change the Contract Documents, he shall notify the ENGINEER immediately in accordance with the requirements for notices of apparent changes set forth in the General Conditions.
- F. The ENGINEER will review a submittal/resubmittal a maximum of two times, after which the cost of the review shall be borne by the CONTRACTOR. The ENGINEER's cost of additional reviews will be equal to the ENGINEER's charges to the OWNER under the terms of the ENGINEER's agreement with the OWNER.
- G. No partial submittals will be reviewed. Submittals not complete will be returned to the CONTRACTOR for resubmittal.

1.11 ALTERNATIVES

- A. Proposals from the CONTRACTOR to substitute means, methods, techniques, Work sequences, or procedure of construction indicated in or required by the Contract Documents that affect the selection of activities and sequences in the Schedule shall be submitted in accordance with the General Conditions. The CONTRACTOR agrees and understands that application for such substitution will not be considered until after the CONTRACTOR has submitted and the ENGINEER has approved the Complete Work Plan as provided by these Contract Documents.
- B. Schedules anticipating achievement of Substantial Completion ahead of the corresponding Contract Time, and therefore incorporating Contract Float Time for the Work, or parts thereof, shall be considered equivalent or equal to Schedules anticipating Substantial Completion exactly on Contract Time.
- C. Upon approval by the ENGINEER of a Schedule with Contract Float Time, and if the CONTRACTOR proposes that compensation for delay must be measured from the anticipated early schedules ahead of the Contract Time, the CONTRACTOR agrees and understands that said proposal will represent to the OWNER that the approved Schedule be evaluated as a substitute Schedule for the purposes of changing the Contract Time to that supported by the approved CONTRACTOR's Schedule. Evaluation of that substitution will be in accordance with the General Conditions, and the Supplementary Conditions, and will require additional supporting data explains and substantiates the basis of the anticipated early schedule. Such supporting data shall consist of:

- 1. Notice of scheduled Work hours.
- 2. Information related to the rates of production including pertinent quantities, crew sizes, man power requirements, major items of equipment, etc. for critical and other significant activities.
- 3. Express or implied contingency allowances figured for activities for such factors as weather, delays, activities of the OWNER and ENGINEER to respond to reports of differing site conditions, and other relevant factors.

Acceptance of that substitution will be evidenced by a Change Order shortening the Contract Time accordingly but maintaining the Contract prices and the level of liquidated damages and incentive set forth in the Agreement.

1.12 TIME ALLOWANCE REQUIREMENTS

A. Reference is made to:

- 1. The time allowance required for the ENGINEER's review and approval of submittals of Shop Drawings and samples.
- 2. The requirements for anticipated repeat submission for particular items of materials or equipment.
- 3. The requirements for anticipated or required time intervals for the performance of specific parts of the Work by the CONTRACTOR.

B. Reference is made to:

- 1. Those other activities indicated in or required by the Contract Documents that are responsibility of the OWNER and ENGINEER.
- 2. The potential time requirements of the OWNER and ENGINEER to investigate instances of potential differing site conditions.
- 3. The time requirements for the ENGINEER to obtain and receive laboratory analysis of removal areas to allow for environmental closure of the site.
- 4. Those other named time allowances required by the Contract Documents.

It is understood that the Contract has included in the Total Contract Price the effect of accommodating all of these time allowances and requirements in the planning, scheduling, and execution of the Work; that the CONTRACTOR's Work plan will incorporate activities and sequences contemplated by the time allowances based on the information indicated in or required by the Contract Documents; and that the CONTRACTOR shall cause the Work or requirements covered by such time allowances to be done within the limits of the Contract

Time.

1.13 SCHEDULE OF SUBMITTALS

The following tabulation denotes schedule, information, and documentation required to be supplied by the CONTRACTOR:

ITEMS	SCHEDULE

1. Description of first two weeks work.

At the Preconstruction Conference.

2. Initial submittal of Schedule, Schedule Within twenty (20) working days after of Values, and Detailed Cost Breakdown. Notice to Proceed.

3. "Marked-Up" Schedule. Five (5) working days before monthly

progress meeting.

4. Updated or Revised Schedule. Five (5) working days after monthly

progress meeting and with submission of

draft Application for Payment.

5. Shop Drawings Submittal Schedule. Preliminary Schedule within twenty (20)

days of Notice to Proceed; updated for

each progress meeting.

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

CONSTRUCTION STAKING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall set stakes and markers in the work area as required to control all work, including the access route, grading work, revegetation, and any other work associated with this project.
- B. The CONTRACTOR shall utilize batter-boards with strings, lasers, or surveying instruments operated by qualified competent personnel to control the construction Work. If the method being used by the CONTRACTOR fails to give proper alignment and grade control to the Work, the ENGINEER shall be empowered to order the CONTRACTOR to use such other method(s) as will provide adequate control.
- C. The ENGINEER may require the CONTRACTOR, at the CONTRACTOR's expense to provide such masts, scaffolds, batter-boards, straightedges, templates, or other devices as may be necessary to facilitate laying out, inspecting and constructing the Work.
- D. The CONTRACTOR shall verify site controls on a monthly basis.
- E. The CONTRACOR shall provide As-Builts of floodplain benches to the ENGINEER prior to submitting Pay Application on a monthly basis.

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment.
- B. Section 02100, Site Preparation
- C. Section 0220, Soil Erosion and Sedimentation Control
- D. Section 02300, Earthwork.
- E. Section 02930, Landscaping

1.03 SUBMITTALS

A. The CONTRACTOR shall submit for ENGINEER's review and approval a Staking Schedule showing the order in which the CONTRACTOR proposes to control and conduct the construction operation prior to the start of Work.

1.04 RELOCATION AND RE-ESTABLISHMENT

A. Where change of location of stakes is required by the CONTRACTOR, or where the CONTRACTOR fails to properly preserve construction survey stakes, such resetting or relocations of stakes shall be done by the CONTRACTOR at no additional cost to OWNER.

B. The CONTRACTOR shall bear all expenses involved in re-establishing and/or resetting any survey control point, land survey point or monument lost or disturbed during his/her construction operation. Such Work shall be done under the direct supervision of a licensed land surveyor.

1.05 STAKING REQUIRED

- A. The CONTRACTOR is required to stake for Staging and Access Areas.
- B. The CONTRACTOR is required to stake for Demolition work.
- C. The CONTRACTOR is required to stake for Clearing and Grubbing work.
- D. The CONTRACTOR is required to stake for all grading and excavation.
- E. The CONTRACTOR is required to stake for all basin and wetland improvements.
- F. The CONTRACTOR is required to stake locations of all revegetation areas, including seeding and planting zones and individual woody plant locations.
- G. Staking of construction easement areas.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

QUALITY CONTROL

PART 1	GENERAL

1.01 SCOPE OF WORK

- A. Quality assurance control of construction
- B. Tolerances.
- C. References.
- D. Inspecting and testing laboratory services.
- E. CONTRACTOR'S field services and reports.

1.02 QUALITY ASSURANCE - CONTROL OF CONSTRUCTION

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Works of specified quality.
- B. Comply with specified standards as minimum quality for Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform by persons qualified to produce workmanship of specified quality. Use persons licensed to perform Works where required by these Specifications or Laws and Regulations.
- D. Secure products and Works in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- E. Materials furnished and finished or intermediate stages of Works shall be sampled, tested, and inspected as specified individual Sections of these Specifications and as required by reference standards.
- F. Performance of tests or observations by ENGINEER or OWNER is sole benefit of ENGINEER and OWNER and are not intended to replace CONTRACTOR's quality control program. CONTRACTOR is solely responsible for establishing and implementing quality control program to ensure that Works are in accordance with Contract Documents.
- G. It is CONTRACTOR's responsibility to notify ENGINEER when CONTRACTOR believes Works (or intermediate stages or parts of Works) are of specified quality and to permit ENGINEER or OWNER to perform independent tests or analyses.
- H. Testing by ENGINEER or failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate OWNER for final acceptance.

1.03 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Works. Do not permit

tolerances to accumulate.

B. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of specified standard, except when more rigid requirements are specified or required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Notice of Award, except where specific date established by code or by individual specification Section.
- C. Contractual relationship, duties, and responsibilities of parties in Contract and those of ENGINEER shall not be altered from Contract Documents by mention or inference otherwise in any reference document.
- D. Publications referred to in these Specifications form part of Specifications to extent specified in individual specification Sections.
- E. All plant materials shall comply with the American Nurseryman Association standards for quality control.

1.05 INSPECTING AND TESTING LABORATORY SERVICES

- A. The CONTRACTOR shall perform testing services as indicated in the Contract Documents.
- B. The CONTRACTOR shall provide the results of the testing to the ENGINEER for review and approval prior to the continuation of work.
- C. The CONTRACTOR shall coordinate with the ENGINEER in the performance of inspections, or approvals required by Contract Documents except as otherwise specifically provided in Contract Documents.
- D. Inspecting, testing, and source quality control may occur on or off Site.
- E. Reports shall be submitted to ENGINEER, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- F. Cooperate with personnel of inspecting and testing firm, and provide safe access to Works.
- G. Provide incidental labor and facilities.
 - 1. To provide access to Works to be tested.
 - 2. To obtain and handle samples at Site or at source of products to be tested.
 - 3. To facilitate tests and inspections.

- 4. To provide storage and curing or preservation, as required, of test samples.
- H. Notify ENGINEER 48 hours prior to expected time for operations requiring inspecting and testing services.
- I. Retesting required because of non-conformance to specified requirements will be performed by the same independent firm on instructions by ENGINEER.
- J. If defects or deficiencies are revealed during testing or inspecting, correct such defects and deficiencies.

1.06 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, test, adjust, and calibration of equipment, and to initiate instructions when necessary.
- B. Submit qualifications of observer to ENGINEER 30 days in advance of required observations. Observer subject to approval of ENGINEER.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Submit report in duplicate within 30 days of observation to ENGINEER for information.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SCOPE OF WORK

Furnish, install and maintain temporary facilities required for construction; remove upon completion of the Work unless otherwise specified.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 01200, Project Meetings.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code, OSHA, MIOSHA, and any local codes.

1.04 TEMPORARY POWER

- A. The CONTRACTOR shall make his own arrangements to provide power distribution as required throughout the Project. Termination of power distribution for each voltage shall be in convenient locations. The CONTRACTOR shall provide at each termination, circuit breakers, disconnect switches, and other electrical devices as required to protect the power supply system.
- B. All temporary equipment and wiring for power shall be in accordance with the applicable provisions of governing codes, and shall be subject to inspection and approval of the local Department of Buildings and Safety Engineering. Temporary wiring shall be maintained in a safe condition and shall be utilized so as not to create a hazard to persons or property.
- C. When permanent electrical power and lighting systems are in operating condition, they may be used for temporary power and lighting for construction purposes provided that the CONTRACTOR:
 - 1. Obtains the approval of the ENGINEER.
 - 2. Assumes full responsibility for power and lighting systems.
 - 3. Installs necessary meters and pays all costs for operation and restoration of the systems and for all electrical power consumed.

1.05 TEMPORARY LIGHTING

- A. The CONTRACTOR shall install and maintain a temporary lighting system as required to satisfy minimum requirements of safety and security.
- B. The CONTRACTOR shall make all necessary applications, obtain and pay for required permits for the temporary service and pay all fees and changes for the electrical energy used.
- C. The CONTRACTOR shall furnish all wiring, switches, fuses, receptacles, lamps and other temporary electric and light equipment, as may be required for his Work. Temporary power and light circuits shall be thoroughly insulated and waterproof. No voltage higher than 120 volts shall be used on any lighting circuitry, unless specifically approved by the ENGINEER. All 15 and 20 ampere receptacle outlets on single-phase circuits shall have approved ground fault circuit protection. All switches shall be of the enclosed safety type. The temporary lighting system shall be subject to inspection and approval of the local Department of Building and Safety Engineering.

1.06 TEMPORARY SANITARY REQUIREMENTS

A. Committing a nuisance on the Site is prohibited and any employee who violates such provisions shall be promptly removed from the Work and shall not again be employed on the Work without the written consent of the ENGINEER. At the start of the Work, suitable and adequate toilet facilities shall be provided for all employees, subject to the approval of the ENGINEER as to the type, size, and location. All temporary sanitary facilities cost is the responsibility of the CONTRACTOR.

1.07 TEMPORARY FIRST-AID

- A. A completely equipped first-aid kit shall be provided and maintained in a clean and orderly condition at the Site of each location where Work is progressing. The first-aid kit shall be readily accessible at all time where people are employed on the Work. The required number of employees who have been properly instructed shall be designated in charge of first-aid Work. The CONTRACTOR shall designate a responsible person on site who shall be in charge of administering first aid when needed.
- B. Telephone numbers for summoning aid from the Police Department, the Fire Department, physicians, ambulances, inhalator, and rescue squads from outside sources shall be conspicuously posted at each Site of the Work.
- C. Provide portable UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide portable UL-rated Class ABC dry chemical extinguishers or a combination of NFPA recommended Classes for the exposure. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

1.08 TEMPORARY CONSTRUCTION

A. If during construction, existing fences are damaged or destroyed, the CONTRACTOR shall restore them to the satisfaction of the ENGINEER. The CONTRACTOR shall bear all expense and supply whatever labor and material necessary to restore these fences, at no

- change in Contract sum.
- B. Complete or partial bulkheads or temporary dams may be built as an aid to the construction operations when approved as to location, type, and size by ENGINEER. Such bulkheads or dams shall be removed prior to the completion of the Work.
- C. The CONTRACTOR shall, where necessary, construct and maintain temporary access roads and drives to all construction facilities with approval by the ENGINEER. The temporary access roads and drives shall be removed by the CONTRACTOR. The areas to be restored shall be compatible with the adjacent undisturbed areas.
- D. The CONTRACTOR shall complete all restoration Work as soon as possible so as to cause a minimum of interference with the normal usage of the land by OWNER for the control of soil erosion and siltation. The restoration or reconstruction of drainage structures and other facilities shall be performed as soon as practicable and in cooperation and compliance with the OWNER and as directed by the ENGINEER.
- E. All temporary construction facilities shall be neatly constructed and arranged on the Site in an orderly manner. The general arrangement of such facilities shall be subject to approval by the ENGINEER. The CONTRACTOR shall prepare and submit to the ENGINEER, for approval prior to starting Work, a construction plan layout, showing arrangement of storage areas, temporary buildings, construction equipment, and storage and Work areas. Suitable, weather-tight storage sheds with raised floors shall be provided of capacity required as specified to contain all materials that might be damaged by storage in the open.
- F. Construction equipment and other facilities such as ladders and ramps shall be strong, substantial, safe and suitable for the purpose intended and shall meet all the applicable requirements of the State of Michigan and the authorities having jurisdiction in the area of the Work.
- G. When temporary building, construction equipment, and other facilities are no longer needed for the Work, they shall be promptly dismantled and removed from the Site.
- H. Some aspects of the Contract may necessitate temporary removal of portions of the property fence. The CONTRACTOR shall provide temporary fencing in order to maintain the security of the site.

1.10 EXISTING UTILITIES

- A. Some underground utilities and underground structures such as pipe lines, electric conduit, and sewers may be shown on the Drawings. Although neither the correctness nor the completeness of such information is guaranteed by the OWNER, the information shown is considered to be reasonably correct and complete.
- B. All underground structures whenever or whatever nature encountered, shall be preserved and restored by the CONTRACTOR unless otherwise shown on the Drawings and all Work necessary therefore shall be included in the Work under the Contract.

- C. Whenever, in judgment of the ENGINEER, such facility need not be removed or relocated, but may be maintained or protected by normal methods without unduly interfering with the proper execution of the Work, such maintenance or protections shall be performed by the CONTRACTOR. In lieu thereof, the CONTRACTOR may arrange with the utility concerned to maintain or protect its facility and he shall bear all expense in connection therewith.
- D. All damages, cracks, settlements, movements, or service disruptions to underground facilities or surface features created or caused by the construction operations shall be corrected without loss of useful life of the facility by adequate repair and/or replacement to the satisfaction of the ENGINEER at no additional cost to the OWNER.
- E. The CONTRACTOR will not be entitled to extension of time for completion on account of delaying any required movement of utility facilities if he was late in providing the original notification to the ENGINEER.
- F. The cost of moving, altering, relocating or maintaining public and private utilities shall be considered incidental to the total Contract sum. The CONTRACTOR shall make all arrangements involving utilities with the respective owner.
- G. No payment will be made where utilities shown in the approximate location have to be removed and replaced or supported within the excavation made for the Work under the Contract.
- H. Whenever pipelines and structures under construction cross existing sewers, utility pipes, or conduit, special precautions shall be taken and protective measures used to avoid damage to the existing facilities. Under no circumstances shall the CONTRACTOR manipulate utility switches, valves, pipes, conduit and the like.
- I. While working near a water main that is considered a hazard, the CONTRACTOR should request the owner to cut off the pressure in such main. Wherever it is possible to do so, the OWNER will cooperate by taking such mains out of service while the construction Work is progressing. Under no circumstances shall the CONTRACTOR operate water main valves.

1.11 FENCING

- A. The CONTRACTOR shall be responsible for securing the materials and equipment.
- B. Temporary fencing (including gates) shall be installed as required to secure the staging/storage areas. All temporary fencing shall be removed upon completion of the Project.

PART 2 - PRODUCTS (NOT USED) PART 3 - EXECUTION (NOT USED)

HEALTH & SAFETY PLAN

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Prepare and maintain on-site Health and Safety Plan (HASP) for CONTRACTOR's operations at the Work site as required in this section.
- B. All grading shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P), and State and local requirements. Where there is conflict between OSHA and State and local regulations exists, the more stringent requirements shall apply.

1.02 REFERENCES

- A. Michigan Occupational Health and Safety (MIOSHA); Chapter 29, Code of Federal Regulations (CFR).
 - 1. Exposure to gases, vapors, dusts and mists (MIOSHA 6201; 29 CFR 1926.55).
 - 2. Exposure to lead (MIOSHA 325.51991-51992; 29 CFR 1926.62).
 - 3. Exposure to cadmium (MIOSHA 325.51851-51885; 29 CFR 1926.1127).
 - 4. Exposure to inorganic arsenic (29 CFR 1926.1118).
 - 5. Occupational noise exposure (MIOSHA 6260; 29 CFR 1926.52).
 - 6. Protective equipment (MIOSHA 6501; 29 CFR 1926, Subpart E).
 - 7. Excavation (MIOSHA IX, X, XIII; 29 CFR 1926, Subpart P).
- B. Copies of MIOSHA safety standards for general industry and construction can be obtained from the Michigan Department of Labor, Safety Standards Division, in Lansing, Michigan. Copies of MIOSHA health construction standards can be obtained from the Michigan Department of Public Health, Division of Occupational Health Standards, in Lansing. OSHA safety and health standards for the construction industry are obtained from the U.S. Government Printing Office, Washington, D.C.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

A. The CONTRACTOR shall prepare a site Health and Safety Plan before any mobilization or work can begin. There shall be a copy of the CONTRACTOR'S HASP on site at all times.

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall prepare a Traffic Control/ Transportation Plan and provide for maintenance of roads and traffic control as specified.
- B. The CONTRACTOR shall adhere to requirements for working within the MDOT ROW, as required.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 01300, Submittals.

1.03 SUBMITTALS

A. Traffic Control/Transportation Plan: As part of the mobilization, the CONTRACTOR shall submit a detailed Transportation Plan demonstrating compliance with specified requirements to ENGINEER for approval. CONTRACTOR shall not commence work until plan is approved by ENGINEER. Plan shall be in accordance with the Michigan Department of Transportation Manual on Uniform Traffic Control Devices as well as any local requirements.

1.04 MAINTAINING TRAFFIC

- A. Traffic shall be maintained on surrounding streets including 10 Mile Road throughout the project.
- B. The CONTRACTOR shall provide access for local traffic to property within the limit of work by means of temporary roads, drives, culverts or other means approved by the ENGINEER. The CONTRACTOR shall grade, add surfacing materials, and dust palliatives to such temporary roads and drives as necessary for the proper maintenance of traffic.
- C. Where the shoulder is used to maintain traffic, the shoulder shall be graded, surface treated for dust, constructed, or reconstructed, as specified herein. If the construction work is suspended due to weather conditions or for any other reason, sufficient labor, materials and equipment shall be ready for immediate use at all times for the proper maintenance of traffic. Surfacing materials and dust palliatives shall be applied at such times and locations and in such amounts as directed by the ENGINEER.

Where shoulders are low, high, soft or rough, adequate provisions shall be taken to inform

- and protect the traveling public by means such as construction warning signs, barricades, lighted devices, etc. Such shoulder hazards shall be eliminated as soon as practicable.
- D. The CONTRACTOR shall furnish, erect and maintain all signs, barricades, lights, and traffic regulators, in accordance with the requirements of the current "Michigan Manual of Uniform Traffic Control Devices," and all flagmen and watchmen as are necessary to maintain and safeguard traffic within the Contract Limits. Failure to comply with these requirements may be cause to issue a stop Work order, which shall remain in effect until all necessary devices are in place and operational.
- E. The issuance of a stop Work order shall not be reason for granting additional compensation or an extension to the Contract Time.

1.05 EXISTING SIGNS

A. No stop sign, traffic control or warning device shall be taken down until the agency having jurisdiction over the roads has been notified and arrangements for reinstallation have been made. The CONTRACTOR shall provide temporary signs, traffic control devices, warning devices, or watchmen continuously from the time the item is removed until it is reinstalled. All signs removed shall be replaced with signs meeting requirements of the agency having jurisdiction over the roads.

1.06 SITE ACCESS AND PARKING

- A. The CONTRACTOR shall locate roads, drives, walks and parking facilities to provide uninterrupted access to construction office, mobilization, work, storage areas, and other areas required for execution of the Contract, as shown on the Drawing and as coordinated with the OWNER.
- B. All construction access shall be from 10 Mile Road.
- C. The CONTRACTOR shall maintain driveways a minimum of 15 feet wide between and around combustible materials in storage and mobilization areas.
- D. The CONTRACTOR shall maintain traffic areas as free as possible of excavated materials, construction equipment, products, snow, ice, and debris.
- E. The CONTRACTOR shall not utilize existing parking facilities for construction personnel or for CONTRACTOR's vehicles or equipment, unless written permission is received from the OWNER.

1.07 TRUCKING ROUTE AND ROAD MAINTENANCE

- A. The CONTRACTOR shall have equipment and delivery access to the project site and truck hauling to/from project site as indicated on Plans.
- B. Prior to the start of construction, the CONTRACTOR shall submit a list indicating the streets and roads within the municipality that his equipment will use off the project site.

- C. The CONTRACTOR shall comply with all safety requirements, weight restrictions and speed limits.
- D. All gravel and dirt roads or streets used shall be maintained by grading, placing dust palliatives and maintenance gravel in sufficient quantities to eliminate dust and maintain traffic.

Paved streets shall be maintained in a reasonable state of cleanliness and the CONTRACTOR shall remove accumulations of debris, dirt or mud caused by his operations. Removal shall be done in such a manner as to prevent the release of dust. CONTRACTOR shall provide and maintain an on-site water vacuum street sweeper for cleaning operations. These operations shall be done at the close of each day's operations or when requested by the ENGINEER or OWNER.

- E. Trucks used in hauling outside the Contract Limits shall be properly covered and comply with both MDOT and local ordinances. Trucks carrying sediment on roads off-site shall have their rear gates chained in addition to normal closures.
- F. The CONTRACTOR shall at all times provide emergency access to property in the vicinity of the construction for police and fire equipment, ambulances or other emergency vehicles to protect life, health and property.
- G. Where public roads, driveways, parking areas and sidewalks are encountered throughout the community, the CONTRACTOR shall maintain those portions affected by the construction operations in a passable condition until such time as final restoration of these improvements can be made as herein specified.
- H. In order to insure adequate street maintenance as outlined above, the CONTRACTOR may be required to deposit with the City of Southfield or governing entity, a cash Road Protection Bond, if required, will be held in escrow until final release is given. In the event the CONTRACTOR fails or neglects to maintain the streets to the satisfaction of the city, the city shall have the required maintenance work done and the cost incurred shall be deducted from the Road Protection Bond. At the completion of the project, the city shall return the Road Protection Bond less any monies expended by the city and shall render to the CONTRACTOR an accounting of all monies so expended.
- I. Contractor is responsible for replacing any pavement and/or curb that is damaged during the project, per section 02940.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)

DELIVERY, STORAGE AND HANDLING

PART 1	GENERAL

1.01 SCOPE OF WORK

A. The general requirements for the delivery handling, storage and protection for all items required in the construction of the Work, as specified herein. Specific requirements, if any, are specified with the related item.

1.02 RELATED WORK

- A. Section 02300, Earthwork
- B. Section 02622, Erosion Control Blankets
- C. Section 02930, Landscaping

1.03 GENERAL TRANSPORTATION, DELIVERY, STORAGE AND PROTECTION

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation. Under no circumstances shall equipment be delivered to the site more than five (5) days prior to installation without written authorization from the ENGINEER.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the CONTRACTOR's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- F. Provide necessary equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e. OWNER or other contractors), perform inspection in the presence of the ENGINEER. Notify ENGINEER immediately both verbally and in writing, of any problems.

- H. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instructions shall be studied by the CONTRACTOR and reviewed by the ENGINEER. Instructions shall be carefully followed and a written record kept by the CONTRACTOR. Arrange storage to permit access for inspection.
- I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- J. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling.

1.04 DELIVERY, STORAGE, AND HANDLING OF PLANT OR SEED

- A. Pack, handle, and transport plant stock in a manner approved for that species and size by ENGINEER. Take precautions that are customary in good trade practice and as recommended by the supplier(s) to ensure proper transport and arrival of plant stock.
- B. Store wet packaged seed in a cool location as recommended by the supplier. Do not store seed longer than recommended by supplier (usually 3-7 days maximum). Do not allow seed to freeze.
- C. Adhere to all planting dates specified within the contract documents.
- D. Deliver and store seed mixtures in original sealed containers. Store seeds in weatherproof and rodent-proof enclosures. Remove seed from site when it becomes wet, moldy, or otherwise damaged.
- E. Label seed containers with the following minimum information:
 - 1. Name and address of supplier.
 - 2. Name of seed mix.
 - 3. Net weight.
 - 4. Date of production and/or shipment.
- F. All live stakes shall be kept in a shaded area of the site to prevent drying of materials. Live stakes shall be kept at temperatures as recommended by the nursery to maintain viability of materials.
- G. All woody plant materials shall be stored in a protected area on site away from storage of other construction materials that may damage plants. Under no circumstances shall woody plants be allowed to be stored on-site for more than 72 hours prior to planting without prior authorization from ENGINEER. All plants shall be sufficiently watered to maintain health and vigor.
- H. The ENGINEER shall reserve the right to refuse any plant material that is unacceptable upon

delivery to site.

- I. The following conditions shall render Plant Stock Unacceptable:
 - 1. Plant stock that has been in storage for an excessive period of time.
 - 2. Plant stock that has been in storage at an excessively high or low temperature.
 - 3. Plant stock displaying mold, decay, or physical damage.
 - 4. Plant stock stored in a manner not suitable for the material.
 - 5. Seeds in damaged packaging are not acceptable.
 - 6. Plant stock that is not correct genus, species, and cultivar as identified on the plant list will not be accepted without prior written approval from ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures.
 - 2. Inspection procedures.
 - 3. Final cleaning.
 - 4. Project as-built documents.
 - 5. Spare parts and maintenance materials.
- B. The following course of action shall be followed for project close out:
 - 1. Request for Intermediate Completion inspection.
 - 2. Development of Punch List by ENGINEER, acknowledged by CONTRACTOR.
 - 3. Completion of items on Punch List.
 - 4. Intermediate Completion Obtained.
 - 5. As-Builts provided.
 - 6. Substantial Completion as defined in Project Schedule.
 - 7. Final payment per General Conditions.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01040, Coordination.
- C. Section 01300, Submittals.

1.03 AS-BUILT DOCUMENTS

- A. Maintain on site, one set of contract documents with actual revisions to the Work shall be recorded in these documents.
- B. Contract Drawings and Shop Drawings: Legibly mark each item to record actual

construction including:

- 1. Field changes of dimension and detail.
- 2. Details not on original Contract Drawings.
- C. Provide three (3) copies of certified as-built drawings by a professional surveyor and one (1) copy digital AutoCad file containing as-built information.
- D. Submit all documents (field, certified, and digital as listed above) to ENGINEER with Application for Final Payment.

1.04 CLOSEOUT PROCEDURES

A. Close out procedures shall be in accordance with General Conditions.

1.05 INTERMEDIATE COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Intermediate Completion, complete the following. List items below that are incomplete in request.
 - 1. Request an inspection for which the ENGINEER will complete a punch list to be acknowledged by the CONTRACTOR.
 - 2. Submit a list of items to be completed and corrected (punch list) as provided by the ENGINEER, the value of items on the list, and reasons why the Work is not complete.
 - 3. Advise Owner of pending insurance changeover requirements.
 - 4. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 5. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

AUDIOVISUAL TAPE COVERAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall provide audiovisual tape record of the construction site for the purpose of establishing, for the record, conditions prior to construction. The Contractor to determine areas within project vicinity to be recorded to document existing conditions prior to construction. Areas that may be included are: 10 Mile Road, utility structures, signs, curbs, guardrails, any other improvements within the vicinity of the project work.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01040, Coordination.
- C. Section 01300, Submittals.

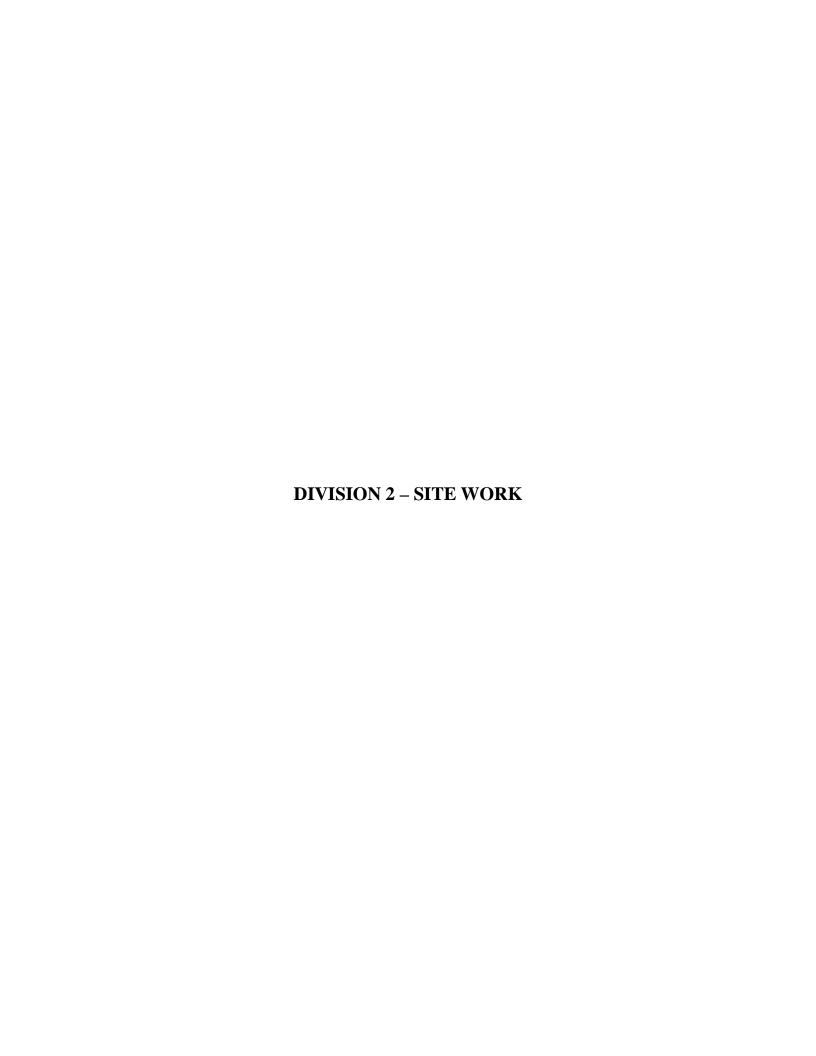
PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

- A. The Contractor shall furnish to the Owner THREE (3) copies of an audiovisual tape record of the construction site for the purpose of establishing, for the record, conditions prior to construction.
- B. The audiovisual taping shall be of a professional quality that will clearly log an accurate visual description of the existing conditions.
- C. The tape shall be in color, on digital format.
- D. The audiovisual taping shall clearly show the date and time of taping.
- E. The audiovisual taping shall be done within the two (2) week period prior to the preconstruction meeting and under the supervision of the Engineer.
- F. Any portion of the tape not acceptable for the determination of the above must be refilmed at no additional charge.

- G. Said tape shall be furnished one week prior to the preconstruction meeting and/or prior to placement of materials or equipment in the construction area.
- H. The tape coverage must include all existing cross streets, driveways, sidewalks, curbs, ditches shrubbery or other structures located on the construction site. Where construction may necessitate a local detour of traffic, additional panning of the full street right-of-way will be required. It will not be necessary to cover side street detours, only areas within the full street right-of-way of the street along which the construction is being done.
- I. Both sides of the entire construction site must be recorded with the rate of speed in the general direction of travel not to exceed 48 feet per minute. Panning rates and zoom-in/zoom-out rates shall be controlled sufficiently so that playback will produce clarity of the object viewed, and locations must be identified by audio and video means at intervals of not more than 50 lineal feet.
- J. The tape must be recorded during a time of good visibility. Taping should not be made during periods of precipitation, snow, leaves or other natural debris.
- K. To ensure proper perspective, the distance from the ground to the camera lens shall not be less than twelve feet, and the Owner shall have the authority to designate what areas may be omitted or added for audio-video coverage.
- L. The recording must be made on a continuous running tape on which sound and video information can be recorded.
- M. To preclude the possibility of tampering or editing in any manner, all video recordings must be by electronic means and display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day and year and be placed directly below the time information. The time information shall consist of hours, minutes, and seconds, separated by colons (e.g., 10:35:18). This transparent information will appear on the extreme upper left hand third of the screen.
- N. For ease of playback, the speed and electronics of the video tape shall be equal to that which is standard to the electronic industry.



GENERAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Demolition of designated structures, and removal of materials from site. Demolition work includes:
 - Tree removal
 - Culvert Removal
 - Crossing Removal
 - Drain Tile Removal
 - Bridge Abutment Removal
 - Fence Removal
 - All other items required to complete the work

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment.
- B. Section 01040, Coordination.
- C. Section 01200, Project Meetings.
- D. Section 01300, Submittals.
- E. Section 01500, Construction Facilities and Temporary Controls.
- F. Section 01700, Contract Closeout.
- G. Section 02100, Site Preparation.

1.03 SUBMITTALS

A. Demolition Plan. CONTRACTOR shall submit a detailed demolition plan explaining his methodology for accomplishing the work.

1.04 PROJECT RECORD DOCUMENT

- A. Submit under provisions of Contract Closeout.
- B. Accurately record actual locations of capped utilities, subsurface obstruction.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable regulations for demolition, safety of adjacent structures, dust control, runoff control and disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, and hydrants without applicable permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

1.06 SCHEDULING

A. Schedule all demolition work to precede new construction.

PART 2 EXECUTION

2.01 PREPARATION

- A. Protect existing landscaping materials and structures which are not to be demolished.
- B. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as required.
- C. Mark location of utilities.

2.02 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent structures and occupancies.

- B. Cease operation immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- D. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.

2.03 DEMOLITION

- A. Disconnect or remove, cap and identify designated utilities within demolition areas.
- B. Remove items completely as indicated on plans.
- C. Backfill areas excavated caused as a result of demolition, if required by Engineer.
- D. Rough grade and compact areas affected by demolition to maintain site grades and contours.
- E. Remove demolished materials from site and legally dispose of.
- F. Do not burn or bury materials on site. Leave site in clean condition.

SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

The CONTRACTOR shall coordinate his work with the OWNER.

A. Section Includes:

- 1. Grant required project signage
- 2. Site fencing and gates
- 3. Tree removal/ clearing
- 4. Protection of existing elements to remain
- 5. Trash and debris removal
- 6. Culvert removal
- 7. Chain link fence removal
- 8. Stream crossing removal
- 9. Drain tile removal
- 10. Bridge abutment removal
- 11. Soil erosion control

B. Related Sections:

- 1. Section 01025, Measurement and Payment
- 2. Section 01040, Coordination
- 3. Section 01200, Project Meetings
- 4. Section 01300, Submittals
- 5. Section 01500, Construction Facilities and Temporary Controls
- 6. Section 01700, Contract Closeout
- 7. Section 02060, General Demolition
- 8. Section 02220, Soil Erosion Control
- 9. Section 02300, Earthwork

1.02 JOB CONDITIONS

- A. Safety: Ensure safe passage of persons around area of site preparation work. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.
- B. Repairs: Promptly repair damages caused to adjacent facilities by site preparation work.
- C. Services Interruptions: Do not interrupt existing utilities serving occupied facilities, except when authorized by Owner. Provide temporary services, acceptable to Owner, during interruptions to existing facilities.
- D. Reused Materials: Carefully remove, store, and protect for reuse designated materials and equipment.

1.03 DEFINITIONS

A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of the Engineer in writing.

PART 2 PRODUCTS

2.01 SAFETY FENCE

- A. Fabric: ALPI Safety Fence, 4 foot height, by American Tenax Products or approved substitute.
- B. Posts: Heavy duty "T" posts, 6 foot long.
- C. Supplier: Construction Supply, Highland, Michigan; (313) 887-6767

2.02 SILT FENCE

- A. Material: As approved by ENGINEER.
- B. Supplier: As approved by ENGINEER.

PART 3 EXECUTION

3.01 DEMOLITION

A. General:

- 1. Unless otherwise noted, demolition shall include the removal of items which would interfere with or be incongruous to construction of the project and as specified in the Contract Documents.
- 2. Use water sprinkling, temporary dust proof enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
- 3. Do not use water when it may create hazardous or objectionable conditions.

B. Verification of Conditions:

- 1. In company with the Owner and Engineer, visit the site and verify the extent and location of selective demolition required.
- 2. Carefully identify limits of selective demolition.
- 3. Mark interface surfaces as required to enable workmen also to identify items to be removed and items to be left in place intact.

C. Utilities:

- 1. Protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction.
- D. Conditions to Remain:

- 1. Protect from damage all adjoining property and adjacent areas not scheduled for construction.
- 2. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to the start of work.

3.02 REMOVAL OF DEBRIS

- A. General: Rubbish or debris shall be removed from the site daily and legally disposed. No large quantities will be allowed to accumulate.
- B. Burning: No burning of rubbish or debris will be permitted.
- C. Salvaged Items: Stockpile all salvaged items for pick-up by Owner.

3.03 ADJUSTMENT OF EXISTING UTILITIES

A. General: All manholes, valve boxes, gate valves, etc., (if any) shall be adjusted to conform to the shape and grade of finished grade. This adjustment shall be in accordance with the regulating agency of the utility involved.

3.04 SOIL EROSION AND SEDIMENTATION CONTROL

A. General Requirements:

- 1. Public Act 346, the Soil Erosion and Sedimentation Control Act of 1972, must be followed. Should the local regulatory agency determine that the construction operations are in violation of the Soil Erosion Act, the Contractor shall take immediate action to remedy the situation.
- 2. Responsibility to render the site erosion free rests with the Contractor. Approval by the Owner of any method to accomplish this does not relieve the Contractor of full responsibility.
- 3. Delays due to shut down from non-compliance with the Soil Erosion Act are the responsibility and at the expense of the Contractor.

B. Operations:

- 1. The soil erosion measures shall be installed prior to any work.
- 2. Operations shall be conducted in such a manner as to reduce and contain erosion. The amount of time land is exposed to the elements by grading operations shall be the minimum.
- 3. Temporary sediment traps, diversion ditches, silt fence, turbidity barriers etc., shall be constructed at locations where necessary in a timely fashion so as to minimize sedimentation of water courses.

CLEARING AND GRUBBING

PART 1	GENERAL

1.01 SCOPE OF WORK

A. This section covers all clearing, grubbing, chipping and within the Contract Limits shown on the Drawing and as required, complete with cutting and removal of trees, shrubs, vegetation, stumps, logs, brush, roots, undergrowth, trash and other discarded materials and disposal of those materials.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.
- C. Section 02060, General Demolition.
- D. Section 02100, Site Preparation.
- E. Section 02300, Earthwork.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable regulatory criteria for environmental requirements, disposal of debris, and use of herbicides, if required.
- B. Any trees 3 inches DBH or larger to be considered bat habitat. No trees of this size to be cut between April 1 and September 30 in any year to avoid take of Indiana Bat, a federally listed endangered species unless the tree is certified by a biologist to be not applicable habitat.
- C. Coordinate clearing work with utility companies.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 GENERAL

- A. Implement sedimentation and erosion control plan as called for on the drawing and prepared by CONTRACTOR for fulfillment of permit requirements.
- B. Clearing and Grubbing: The CONTRACTOR shall remove completely those trees marked

- for removal or as indicated on the Drawings. All woody debris shall be properly disposed of off-site. Some woody material may be stockpiled and re-used as habitat structures, as approved by the ENGINEER.
- C. Clearing and Grubbing: The CONTRACTOR shall remove completely and dispose of any other trees, stumps, brush, shrubs, hedges, roots, logs, debris, trash and discarded materials as indicated on the Drawings.
- D. Depth of Removal: For areas to be excavated, the trees, stumps, and roots shall be removed to a depth of not less than 12 inches below the final grade, or as approved by the ENGINEER.
- E. Removal of Trees, Stumps, and Other Vegetation: Where trees cannot be felled without danger to traffic or injury to other trees, structures, or property, these trees shall be cut down in sections. The removal of stumps and roots may be accomplished by the use of a shredding machine meeting the approval of the ENGINEER.
- F. The burial of trees, stumps and other vegetations, will not be permitted. The trees, stumps, and other vegetation may be hauled for proper disposal if not salvaged by the CONTRACTOR.
- G. Holes and Trenches: All holes and trenches remaining after the grubbing operation in embankment areas shall have the sides broken down or leveled, and shall be refilled with earthfill material.
- H. Salvaging Timber: Trees required to be removed and having a diameter of four (4) inches, or more, are classed as merchantable timber and shall become the property of the CONTRACTOR.
- I. Stabilization of Cleared Areas: The CONTRACTOR shall ensure that all cleared slopes shall be stabilized to prevent erosion. This may include the use of soil erosion matting to hold slopes in place, as approved by the ENGINEER.
- J. Salvage and stockpile logs pursuant to and meeting the Specifications contained within.

AGGREGATE MATERIALS

PART 1	GENERAL
1.01	SECTION INCLUDES
A. B. C.	Aggregate materials for Access Route Aggregate materials for At-Grade Riffles Aggregate materials for Crossing Replacement
1.02	RELATED WORK
A. B. C. D. E.	Section 01300, Submittals Section 01400, Quality Control. Section 02271, Rip Rap. Section 02300, Earthwork. Section 02950, Habitat Structures.
1.03	REFERENCES
A. B. C. D.	ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop. ASTM D2487 - Classification of Soils for Engineering Purposes. Michigan Department of Transportation (MDOT) 2003 Standard Specifications for Construction plus updates.
1.04	SUBMITTALS FOR REVIEW
A. B.	Submittals: Procedures for placing aggregates. Samples: Submit 50 lb sample of each aggregate type less than 6". For larger material arrange for engineer to visit supplier quarry to inspect material prior to shipment to project site.
1.05	SUBMITTALS FOR INFORMATION
A.	Materials Source: Submit name of imported materials suppliers and most recent tes results from supplier.
1.06	QUALITY ASSURANCE
A.	Perform Work in accordance with the EGLE permit.
PART 2	PRODUCTS

2.01

AGGREGATE MATERIALS

- A. Aggregates for Access Roite: 1"- 3" Limestone
- B. Aggregates for At-Grade Riffles: 8-16" Natural Glacial Stone and 4-8" Natural Glacial Cobble (see Section 02271, Rip Rap); use infill 50% sand, 50% gravel in at-grade riffles
- C. Aggregates for Temporary Crossing: 1"-3" Limestone and 4-8" Limestone (see Section 02271, Rip Rap)

2.02 SOURCE QUALITY CONTROL

- A. Section 01400, Quality Control.
- B. If tests indicate materials do not meet specified requirements, change material or material source and retest
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 STOCKPILING

- A. Stockpile materials on site at locations designated on the plans or by Owner.
- B. Do not stock pile in areas where aggregates can be washed into waterways or storm drains.

3.02 EQUIPMENT

A. Placing of the aggregate shall be by means of a moving vehicle equipped with spreader box, mechanical spreader, or other approved equipment capable of laying the courses so that the finished layer will be of the proper gradation and thickness.

3.03 PLACING AGGREGATE

A. Place aggregate by using approved placing equipment in a uniform layer to the required contour and shape and in layers. Segregation of large or fine particles will not be acceptable and pockets of segregated material shall be removed and replaced with a satisfactory mixture or shall be remixed as directed and approved by the Owner's representative.

3.04 COMPACTION

A. After placing, compact the material by approved means.

3.05 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

GRADING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section includes final grading as indicated on the Drawings.

1.02 RELATED WORK

- A. Section 01010, Summary of Work.
- B. Section 01025, Measurement and Payment.

PART 2 PRODUCTS

- A. Top Soil Imported topsoil for placement shall meet the following additional requirements:
 - 1. Topsoil shall not contain a mixture of natural underlying soils, subbase materials, or other foreign material.
 - 2. Topsoil shall consist of natural loam, sandy loam, silty loam, or clay loam, humus bearing soils adapted to the sustenance of plant life, and such soils shall be neither excessively acid nor alkaline
 - 3. Topsoil shall have a minimum organic matter content of 3%. CONTRACTOR shall provide fertility test for selected material(s) at the request of the LANDSCAPE ECOLOGIST at no additional cost to the OWNER.
 - 4. Topsoil may be unscreened subject to approval as specified herein.

PART 3 EXECUTION

3.01 PERFORMANCE:

- A. Grading: Sites shall be graded as specified on the Contract Drawings or as directed by the ENGINEER. Provisions shall be made to preserve and protect trees and other vegetation specified on the Drawings or identified by the ENGINEER not to be removed.
- B. Rough Grading: The site shall be graded as necessary to comply with the Drawings or as approved by the ENGINEER. The subgrade shall be roughly established by cut or fill, approximately parallel to proposed finished grades and to elevations which allow for thickness of topsoil (6 inch minimum topsoil depth).

- 1. In fill areas, all debris shall be removed from the area to be filled and disposed of legally off-site.
- 2. Original ground on sloping sites shall be scarified and benched or otherwise treated to provide adequate bond and to prevent slippage of fill.
- 3. Fill material shall be free of debris or other detrimental material and shall have a reasonable moisture content when placed. If possible backfilling and grading shall be accomplished when the ground is frost-free and there is favorable weather. However, if winter grading is necessary, all ice and snow shall be removed from the surface of the ground before the fill is placed. No frozen material will be allowed in the fill area or in the embankment being constructed. Any frozen material on a partially completed fill shall be removed before placing any more fill. This frozen material shall be stockpiled outside the grading limits until thawed. Thawed material from the stockpiled frozen material may be used in the fill and embankment areas.
- 4. After occurrence of heavy rain, do not operate on previously placed material or on approved excavations until materials have dried sufficiently to prevent occurrence of excessive rutting.
- 5. Where excavations or previously placed material have been softened or eroded, remove soft and yielding material or otherwise objectionable or damaged areas and replace with compacted fill as directed by ENGINEER.
- 7. In areas where equipment traffic has compacted subsoil, cultivate subsoils to depth of 6 inches where vegetation is to be placed.
- 8. Place specified soil in continuous layers not exceeding 6 inches. Place during dry weather and on moist, unfrozen subgrade. Manually place soil around trees, shrubs, and other obstacles.
- C. Final Grading: The subgrade shall be smoothed parallel to proposed finished grades and elevations specified on the Drawings. The subgrade shall be scarified to assure bond with the general backfill or topsoil.
 - 1. Finished grading shall be done when the ground is frost-free and weather is favorable.
 - 2. After receiving approval for use of on-site stockpiled topsoil and/or off-site sources of topsoil and/or constituent sources and method of formulating these soils at Site, complete soil testing. Submit required soil materials quality submittals.
 - 3. Obtain approval of soil source and soil quality from ENGINEER as well as those regulatory agencies that may be involved prior to commencing transport to Site (if required) and, if soils are formulated on Site, obtain approval for formulated soils prior to utilization at Site.

- 4. Install topsoil to a settled depth of 4 inches in Upland Areas. Complete installation in a manner that does not result in damage to existing vegetation.
- 5. Shallow disc and subsequently roll seedbed to provide uniform and firm, but not compact, seedbed in Upland areas only. Top 3 inches shall be loosely consolidated and moist.
- 6. Remove lumps, stone, litter, and other foreign non-organic material larger than 1 inch. Remove non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes.
- 7. Verify that field conditions such as grades, soil drainage, water depths, soil chemistry, and sunlight availability, are appropriate to vegetation proposed in Work Plan.
- 8. Final grading for Wetland areas includes the placement of a minimum depth of 6 inches of topsoil to meet finish grade elevations as noted on the Plans. Topsoil placement shall be left in a rough grade state with micro-topography up to 3 inch height variances throughout the specified wetland area. No backblading (smooth surface) is allowed.
- 9. Provide final as-built survey as a grade check to the ENGINEER within 3 business days after final grading has been completed and prior to any revegetation installations. Upon receipt, the ENGINEER can request modifications to the final grading to ensure that the grading is in compliance with the bid documents and meet the wetland performance standards, at no cost to the OWNER.

3.02 TOLERANCES

A. Final grading for subgrade shall be within 0.1 foot vertical greater or less than specified depth but not uniformly greater or less. Final topsoil grade elevations may vary up to 0.1 feet vertical greater or less than specified depth but not uniformly greater or less, except as noted for wetland areas.

TOPSOIL

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Ripping of Subgrade
 - 2. Treatment of Topsoil to Remove Deleterious Materials
 - 3. Placement of Topsoil
 - 4. Blading of Topsoil Smooth After Placement
- B. Related Sections:
 - 1. Section 02300 Earthwork

1.02 REFERENCES

- A. ASTM American Society for Testing Materials:
 - Test method for Laboratory Compaction Characteristics of Soil Using Modified Effort, ASTM D 1557-91.

1.03 DEFINITIONS

- A. Soil Subgrade: The soil surface on which topsoil is placed.
- B. Finished Grades: The final grade elevations indicated on the Grading Drawings.
- C. Aesthetic Acceptance of Grades: Acceptance by the ENGINEER in writing of the Aesthetic Correctness of the contours as observed without a survey instrument. Aesthetic Acceptance does not address whether an area drains properly, whether the areas are at the correct elevation, or whether it has been compacted properly.
- D. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of the ENGINEER in writing.

1.04 SUBMITTALS

A. Soil Test Report: Submit 3 copies of soil analysis data of all imported topsoil showing the following characteristics; resulting from a current agronomic and full textural class analysis of a topsoil sample collected from the actual soil proposed to be used. The results of the tests shall be submitted to the ENGINEER and must include sample date and reference the collection location.

Rouge River AOC Tamarack Creek Habitat Restoration Project

- 1. Composition shall be in general accordance with ASTM D5268 subject to the following:
 - a. Gradation

<u>Texture Class %</u>	Total Weight	Average %
Sand (0.05-2.0 mm dia. range)	25 - 75	50
Silt (0.002-0.05mm dia. range)	15 - 40	27.5
Clay (< 0.002 mm dia. range)	15 - 30	22.5

b. Chemical Attributes

<u>Chemical Attribute</u>	<u>Range</u>
pH	6.8 - 7.5
Organic Matter	3% - 6%

Salinity EC<2 mmhos/cm

c. Topsoil shall contain the following minimum ammonium bicarbonate DPTA (chelate) extractable nutrients.

NutrientConcentrationNitrogen5 ppm air dried basis

Phosphorous 5 ppm Potassium 30 ppm Iron (Fe) 5 ppm

1.05 SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily.
 - 2. Do not work soil when muddy or frozen.

1.06 WARRANTY

A. Warrant that topsoil layer shall be free of settlement below the finish grades for a period of one year from date of Final Acceptance.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil:

1. Quality: Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign materials., free of herbicide contamination

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Section 02216 Topsoil and Topsoil Placement

Tamarack Creek

Habitat Restoration Project

- and other substances toxic to plant growth, stones over one-inch diameter, sticks, oils, chemicals, plaster, concrete and other deleterious materials.
- 2. The topsoil shall consist of sandy loam, with soil particles within the following percentages: clay; 0-25; silt; 25-50; sand; 50-70; decomposed organic matter; 5-10. The clay content is optional.
 - The soil shall have a soil acidity range between a pH 5.0 to pH 7.0. The soil salinity shall not exceed 3 millimhos per centimeter at 25oC (as described by USDA Circular No. 982).
- 3. Nematodes: Parasitic nematode population shall not be more than 200 per 50 cubic centimeters of soil.
- 4. Source: Imported from accepted source. The Contractor shall notify the Engineer of the source of topsoil not less than 10 days prior to excavation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Subgrade: Verify that subgrade has been graded to correct elevations.
- B. Verification of Conditions: Examine site and verify that conditions are suitable to receive work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.
- C. Unsuitable conditions: Before proceeding with work, notify Owner and ENGINEER in writing of all unsuitable conditions and conflicts.

3.02 PREPARATION

A. Ripping Subgrade:

- 1. Timing: Prior to placing topsoil, rip all areas to receive topsoil on the same day topsoil is placed.
- 2. Direction at Slopes of 5:1 or More: Rip soil parallel with slope contours in one direction.
- 3. Direction at Areas of Less Than 5:1 Slopes: Rip areas in two directions 90 degrees to each other.
- 4. Depth at Slopes of 5:1 or More: Rip to a depth of 6 inches unless indicated otherwise.
- 5. Depth at Areas of Less Than 5:1 Slopes: Rip to a depth of 12 inches unless indicated otherwise.
- 6. Tine Spacing: Space ripping machine tines at 18 inches on center.
- B. Clearing Subgrade: Clear subgrade of all stones larger than 2 inches, sticks, and other extraneous materials prior to placement of topsoil.

Rouge River AOC Tamarack Creek Habitat Restoration Project C. Cleaning Topsoil: Remove stones larger than one inch, sub-soil refuse, tree and shrub roots, clods, sticks and other deleterious materials from topsoil prior to spreading.

3.03 PLACEMENT OF TOPSOIL

A. Location: Place topsoil at locations and at thicknesses shown on the Drawings.

B. Depth:

- 1. Place at thicknesses as shown on the Drawings.
- 2. Make allowances for settlement, addition of soil amendment, and fine grading.

3.04 TOLERANCES

A. Finish Grades:

- 1. Grade all planting areas and lawns to within 0.10 foot of grades indicated on the Grading Plans, except bring grades along paving, curbs and other structures to within 0.02 foot of grades shown on the Grading Plans.
- 2. Transition grades along paving, curbs and other structures to areas of less strict tolerance over 6 feet distance.

3.05 SPILLAGE, DUST AND EROSION CONTROL

A. Spillage:

- 1. Take precautions to prevent spillage when hauling on or adjacent to any public street or highway.
- 2. In the event that spillage occurs, remove all spillage and sweep, wash, or otherwise clean such streets or highways as required by local City, County or State authorities.
- B. Dust Control: Use water trucks or temporary irrigation and take all precautions needed to prevent a dust nuisance to adjacent public or private properties.

C. Erosion Control:

1. Comply with the Soil Erosion and Sedimentation Control requirements listed under Section 02100.

3.06 FIELD QUALITY CONTROL

A. Field Observation Reviews by the ENGINEER: Coordinate and schedule with the ENGINEER.

3.07 PROTECTION OF TOPSOIL

- A. Drainage: Keep surface of the topsoil in such condition that it will drain readily and effectively.
- B. Compaction and Contamination: In handling materials and operating tools and equipment, protect the topsoil from damage by laying down planks, plywood, or other accepted protective devices where required and take other precautions as needed to protect topsoil from compaction and contamination.
- C. Vehicular Traffic:
 - 1. Do not allow vehicles to travel in a single track.
 - 2. If ruts are formed, blade rutted topsoil smooth.
- D. Storage of Materials: Do not store or stockpile materials on the topsoil.
- E. Excessive Compaction:
 - 1. Avoid excessive compaction of planting areas.
 - 2. Rip to 12-inch depth, rototil, and blade smooth areas which become compacted more than 85 percent as determined by ASTM D 1557-91.

SOIL EROSION CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification section provides certain requirements, techniques, and measures to minimize erosion damage to the construction site.

1.02 GENERAL

- A. In general, the CONTRACTOR shall conduct operations in such a manner as to limit any exposed area of any disturbed land for the shortest practicable period of time, and any sediment caused by soil erosion due to operations shall be restricted and reduced to a non-polluting minimum before it leaves the site.
- B. The CONTRACTOR shall comply with all requirements under the *Natural Resources and Environmental Protection Act, Act 451 of 1994 as amended by PA 504 of 2000*, and any local rules. Where these Specifications are more stringent, then these Specifications shall govern.
- C. All temporary stabilization work done shall be coordinated with Section 02940, Site Restoration, so that this work does not interfere with the final site restoration.

1.03 RELATED WORK

- A. Section 01300, Submittals.
- B. Section 02060, Demolition.
- C. Section 02300, Earthwork.
- D. Section 02621, Geotextile for Separation.
- E. Section 02622, Erosion Control Blankets.
- F. Section 02930, Landscaping.
- G. Section 02940, Site Restoration.

1.04 INLAND LAKES AND STREAMS ACT

All waterway crossings are subject to the provisions of the *Part 301 of the Natural Resources and Environmental Protection Act of 1994, as amended, and the Administrative Rules.* The CONTRACTOR's activities shall adhere to the provisions of this act and the CONTRACTOR shall hold the Owner harmless from any violations, civil action, or penalties arising from the CONTRACTOR's actions.

B. The CONTRACTOR shall comply with all requirements of the EGLE (formerly the MDEQ) joint permit. A copy of the permit is attached herein.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Coordinate this work with Section 02940, Site Restoration.
- B. Silt Fence Silt fence shall be standard geotextile product on wood stakes. Fabric height shall be 36" (6 inch buried, 30" above ground) and post spacing at 6.5 feet.
- C. Erosion Control Blanket Erosion Control Blankets shall be used in accordance with Section 02622 and at locations shown on the plans.

PART 3 EXECUTION

3.01 EROSION PROTECTION

- A. In order to limit the length of time that the exposed area is subject to the elements and the subsequent conditions causing erosion, the CONTRACTOR shall take steps to minimize time and exposure and keep within the bounds of permits.
- B. Any unforeseen situations that may be encountered during the course of construction that may cause accelerated erosion and deposition of sediment into waterways will be controlled by methods that may include sediment traps. Any slope failures or development of gullies after construction has been completed will be corrected immediately.
- C. All sediment must be contained within the work area. Discharge to the Rouge River and associated branches containing sediment must be filtered through geotextile bags or similar treatment systems capable of removing suspended sediments prior to discharge.

3.02 SILT FENCE

- A. Silt fence shall be installed at locations as identified in the plans prior to any movement of soil.
- B. Silt fence shall be installed per manufacturer's recommendations. Silt fence should have the bottom of the geotextile be trenched into the grade a minimum of six inches and backfilled appropriately to ensure flow stabilization of surface drainage. Both ends of silt fence shall wrap up-slope slightly to hold flow of water in drainage feature.
- C. Silt fence shall be maintained by specifications for the duration of the project. Silt fence shall not be removed until the end of the warranty period, as defined in Section 02930 Landscaping.

3.03 EROSION CONTROL BLANKET

- A. Erosion Control Blankets shall be used in accordance with Section 02622 and as indicated on the project drawings.
- B. Erosion Control Blankets shall be installed per manufacturer's recommendations.

3.04 APPLICATION OF PERMANENT STABILIZATION

- A. Permanent stabilization shall be applied to all areas disturbed by the CONTRACTOR during completion of the work required by the Contract.
- B. The stabilization shall be accomplished within five days of completion of final grading, provided that earth change is made within the stated season for such stabilization.
- C. If the final earth change is accomplished at a time outside of the stated seeding season, temporary stabilization shall be applied within five days of completion of the final earth change and shall be replaced with permanent stabilization as soon after the following April 20, or before if the ground is workable.

3.05 APPLICATION OF TEMPORARY STABILIZATION

- A. Temporary stabilization shall be applied to areas where initial work has caused disturbance and the final earth change will not be completed immediately and to areas where the final earth change is completed between October 1 and April 20. Temporary cover seeding shall be utilized, such as annual rye.
- B. Temporary stabilization shall be applied to areas where the final earth change has been completed, including final grading and topsoil placement, between the dates of October 1 and April 20. The disturbed areas shall have mulch placed and anchored as described in the following paragraphs. After April 20, areas to be seeded shall be seeded through the mulch. Mulch shall be added and anchored as necessary to replace that lost prior to April 20.
- C. Areas disturbed by construction activities but on which the final earth change has not been made shall be graded to provide positive drainage and shall be temporarily stabilized to prevent erosion.
- D. Areas which receive an initial earth change and on which further work is to be done within three months shall be graded to provide positive drainage and shall have temporary stabilization placed and anchored.
- E. Refer to Section 02930, Landscaping and Section 02422, Erosion Control Blanket.

3.06 SEEDING FOR TEMPORARY AND PERMANENT STABILIZATION

A. Site Preparation – The seedbed immediately before seeding shall be firm but not so compact as to prohibit the seed from securing adequate germination or root

penetration. Topsoil shall be replaced after grading operations for permanent stabilization. No topsoil is required for temporary stabilization. Tillage implements shall be used as necessary to provide at least a 3-inch depth of firm but friable soil, free of large clods and stones and other debris. All seeding shall be protected by mulching or erosion control blanket. Mulching work shall also be included in temporary stabilization. See Section 02930 of these specifications for details of permanent stabilization which include spreading topsoil, seeding, blanketing, establishment and guarantee.

B. Seeding Dates – Seed shall be applied from April 20 to October 1 for permanent stabilization and from April 20 to October 1 for temporary stabilization. The seeded areas shall be kept moist for fourteen (14) days to ensure growth. If the site is readied for seeding and during non-seeding months, it shall be protected by mulching. The site can be seeded later through the mulch. Seeding shall not be done on frozen soil, if the soil is snow covered, or when environmental conditions prohibit germination, as per Section 02930.

RIPRAP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section includes the furnishing and installation of riprap on subgrade approved by Engineer.

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment
- B. Section 01040, Coordination
- C. Section 01200, Project Meetings
- D. Section 01300, Submittals
- E. Section 01400, Quality Control
- F. Section 01500, Construction Facilities and Temporary Controls
- G. Section 01700, Contract Closeout
- H. Section 02220, Soil Erosion Control
- I. Section 02300, Earthwork

1.03 REFERENCES

- A. ASTM C136 Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- C. ASTM D2487 Classification of Soils for Engineering Purposes.
- D. Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction plus updates, Section 813 and 916.

1.04 SUBMITTALS FOR REVIEW

A. Submittals: Procedures for placing riprap

1.05 SUBMITTALS FOR INFORMATION

A. Materials Source: Submit name of imported materials suppliers and most recent test results from supplier.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with the EGLE (formerly MDEQ) permit.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store materials in a manner which will prevent deterioration or damage, contamination with foreign matter, damage by weather or elements, and in accordance with Manufacturer's directions.
- B. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. 8"-16" Natural Glacial Cobble for At-Grade Riffles: Stone shall be natural glacial cobble with a gradation of 8" to 16", an approximate D50 of 10" (half of the material by volume must be 10 inches or smaller), and an approximate D90 of 14" (90% of material by volume must be 14" or smaller).
- B. 4"-8" Natural Glacial Cobble for At-Grade Riffles: Stone shall be natural glacial cobble with a gradation of 4" to 8".
- C. 4"-8" Limestone Riprap at At-Grade Stream Crossing: Stone shall be limestone with a gradation of 4" to 8".
- D. 18"-36" Boulders for Rootwad Revetments: Boulders shall be limestone or natural quarry stone with a median (not the minimum or maximum radius) axis ranging from 18" to 36". 50% of the boulders by number must be 24 inches or larger along the median axis.
- E. All materials above shall be free of dirt, debris, or deleterious material.

2.02 SOURCE QUALITY CONTROL

- A. Section 01400, Quality Control.
- B. If tests indicate materials do not meet specified requirements, change material or material source and retest
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 GENERAL

A. Riprap materials, placement and procedures shall conform to MDOT Section 813 and 916.

3.02 PREPARATION

A. Excavate or fill to the required subgrade. Compact and shape the subgrade for the bottom of riprap.

3.03 INSTALLATION

- A. General: Conform to slopes and dimensions indicated on the Drawings or as directed by Engineer.
- B. Grading: Excavate to finished grade of required section and slope.
- C. Placing Rock: As indicated on the Drawings and in accordance with this Section.
- D. Maintenance: Regrade and relay rock as necessary.
- E. Geotextile Fabric: Secure geotextile fabric area prior to placing riprap. Placement shall be per Section 02621.

3.04 STOCKPILING

A. Stockpile materials on site at locations designated on the plans or by Owner and shall be in upland areas outside of the 100-year floodplain boundary.

3.05 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

EARTHWORK

PART	1	GENERAL
1.01		SECTION INCLUDES
	A.	Excavation
	B.	Grading
	C.	Fill Placement
1.02		RELATED WORK
	A.	Section 01330, Construction Staking
	B.	Section 01400, Quality Control
	C.	Section 02207, Aggregate Materials
	D.	Section 02271, Rip Rap
	Е.	Section 02220, Soil Erosion Control
	F.	Section 02621, Geotextile for Separation
	G.	Section 02930, Landscaping
	Н.	Section 02940, Site Restoration
1.03		REFERENCES
	A.	MDOT- Michigan Department of Transportation, "Standard Specifications for Construction", current edition.
	B.	ASTM- American Society of Testing Materials, latest edition.
1.04		SUBMITTALS FOR REVIEW
	A.	Section 01300, Submittals:
		 Procedures for excavation. Procedures for placing and compacting backfill. Procedures for placing aggregates.
1.05		SUBMITTALS FOR INFORMATION

A. Materials Source: Submit name of imported materials suppliers and most recent test results from supplier if available.

1.06 QUALITY ASSURANCE

A. Codes and Standards

- 1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- 2. Provide for visual inspection of bearing surfaces by Engineer.
- 3. Testing and Analysis of fill soil: All testing shall be performed by the Contractor. All testing shall be performed in accordance with ASTM for verification of material compliance and sufficient compaction.
- 4. If tests indicate materials do not meet specified requirements, change material and retest.
- 5. Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring. All excavations shall be completed and maintained in a safe and stable condition throughout the total construction phase. Structure and trench excavations shall be completed to the specified elevations and to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Excavations outside of the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the Contractor in constructing and maintaining a safe and stable excavation.

1.07 DELIVERY AND STORAGE

- A. Deliver and store materials in a manner to prevent contamination. Storage areas will be as designated by the ENGINEER and OWNER. All site material shall be stored in areas that are not prone to flooding.
- B. Stockpile sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Prevent intermixing of soil types or contamination.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

1.08 SITE CONDITIONS

A. Site Information

1. Examine the site to ascertain the state and conditions under which work is to be done.

B. Existing Utilities

1. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork

- operations.
- 2. Contact MISS DIG min of 3 working days prior to starting work.
- 3. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the utility owner immediately for directions.
- 4. Cooperate with Owner and utility companies in keeping respective services and facilities in operation.
- 5. Repair damaged utilities to satisfaction of utility owner.

C. Protection of Persons and Property

- 1. Barricade open excavations occurring as part of this work in accordance with OSHA's Excavation standards 29 CFR Part 1926, Subpart P.
- 2. Protect utilities, pavements, and other facilities from damages caused by settlement, lateral movements, undermining, washout and other hazards created by excavation operations.
- D. Defective Work: If during progress of the work, testing indicates that materials do not meet specified requirements, remove defective work and replace at no cost to the Owner.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. General:

1. Soil materials shall be free of debris, roots, wood, scrap material, vegetative matter, refuse, soft unsound particles, and frozen, deleterious or objectionable materials.

B. Fill:

- 1. Site soil
- 2. For aggregates for Access Route, At-Grade Riffle, and At-Grade Stream Crossing see Section 03500
- 3. Use 50% sand, 50% gravel for infill for At-Grade Riffles
- 4. Use 50% topsoil, 50% sand for infill at basin excavation area
- 5. 18" 36" Boulders (Section 03500)
- 6. Topsoil: Per Section 02930, Landscaping

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine site and verify that conditions are suitable to receive work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

- B. Unsuitable Conditions: Before proceeding with work, notify Owner and Engineer in writing of all unsuitable conditions and conflicts.
- C. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

A. Protection of Existing Conditions:

- 1. General: Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, irrigation systems, plant materials and paving on or adjacent to the site of the work.
- 2. Barriers: Provide barricades, fences or other barriers as necessary to protect existing conditions to remain from damage during construction.
- 3. Lines and Levels: Identify required lines, levels, contours, and datum locations.
- 4. Utilities: Locate, identify, and protect utilities that remain from damage.
- 5. Landscaping: Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- 6. Other features: Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- 7. Notification of Damages: Submit written notifications of all conditions damaged during construction to the Owner and Engineer immediately.

3.03 EXCAVATION

A. General

- 1. Excavate as required for construction of the work.
- 2. Where wet or otherwise unstable soil incapable of properly supporting the work, as determined by the Engineer, is encountered in the bottom of an excavation, such material shall be removed to at least 24 inches below bottom of work and replaced to the proper grade with select granular material, compacted as directed by the engineer. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the Owner.
- 3. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer shall be at the Contractor's expense. Backfill and compact unauthorized excavations with material of the same classification, unless otherwise directed by the Engineer.
- 4. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- 5. Protect bottom of excavations and soil adjacent to slopes from freezing.

B. Stockpiling Excavated Material for Filling or Backfilling (If Needed)

1. Stockpile excavated materials where directed by OWNER/ENGINEER until required for backfill or fill.

- 2. Locate and retain fill materials away from edges of excavations.
- 3. Dispose of excess soil material and waste materials legally.

C. Unauthorized Excavation

- 1. Care shall be taken not to excavate below the depths indicated. Excessive or unauthorized excavations shall be filled at no cost to the OWNER.
- 2. Unauthorized excavations shall be filled with site fill as directed by ENGINEER.

D. Stability of Excavations

- 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction.
- 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

E. Shoring and Bracing

- 1. Shore and brace excavations as required to prevent cave-ins. Shoring and bracing shall be constructed of sound material, accurately placed, and securely braced. The CONTRACTOR shall assume full responsibility for adequate construction of shoring and bracing, and shall be responsible for the safety of all persons occupying excavated sites.
- 2. Provide shoring, including soldier beams and wood lagging or other protective measures, as may be necessary to protect adjacent structures, facilities and utilities at all times. Assume the responsibility for the adequacy of the design, installation and effectiveness of all shoring and other protective measures utilized, and repair damage resulting from failure to take adequate measures for protection of persons and adjacent property (including but not limited to, land, structures, facilities, pavements, utilities and grades). Remove shoring when no longer required.
- 3. Prior to installation, make every effort to determine the presence of existing underground conditions not indicated. If unknown services or obstructions are discovered, the CONTRACTOR shall notify the ENGINEER before proceeding.
- 4. Remove all shoring and bracing prior to backfilling.

F. Dewatering

- 1. Do not conduct work in standing or running water. At all times prevent runoff, surface water and subsurface or groundwater from entering the excavation or flooding the project site and surrounding area.
- 2. When water is present in the work area, dewater to maintain stability of in-situ and imported materials. Maintain water level below work to provide a stable excavation bottom. Use, as appropriate, sump pumps, well points, deep wells, geofabrics, perforated underdrains, or stone blankets of sufficient thickness to remove and control water in the trench. When excavating while depressing ground water, ensure the ground water is below the bottom of cut at all times to prevent washout from behind sheeting or sloughing of exposed trench walls. Maintain control of water in the excavation before, during, and after work installation and sufficient backfill has been placed to prevent damage or disruption to work. To preclude loss of soil support, employ dewatering methods that minimize removal of fines and the creation of voids in in-situ materials.

3. Convey water removed from excavations and rain water to collecting or runoff areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use excavations as temporary drainage ditches.

G. Utilities

- 1. Maintain, reroute or extend as required, existing utility lines to remain which pass through excavation area.
- 2. Protect utility services uncovered by excavation.
- 3. Cap off, plug or seal, discontinued utility services and remove from site within excavated areas.

3.04 BACKFILL AND FILL

A. General

1. Place acceptable soil material in layers to required subgrade elevations.

B. Timing

- 1. Backfill excavations as promptly as work permits, but not until completion of the following:
- 2. Inspection, testing approval, and recording locations of underground utilities.
- 3. Removal of trash and debris.

C. Examination:

1. Verify structural ability of unsupported walls to support imposed loads by the fill.

D. Preparation:

- 1. Compact subgrade to density requirements of subsequent backfill materials.
- 2. Cut out soft areas of subgrade not capable of compaction in place. Backfill with clean fill and compact to density equal to or greater than requirements for subsequent fill material.
- 3. In fill areas, all debris shall be removed from the area to be filled and disposed of legally off-site.
- 4. Original ground on sloping sites shall be scarified and benched or otherwise treated to provide adequate bond and to prevent slippage of fill.

E. General Placement:

1. Fill material shall be free of debris or other detrimental material and shall have a reasonable moisture content when placed. If possible backfilling and grading shall be accomplished when the ground is frost-free and there is favorable weather. However if winter grading is necessary, all ice and snow shall be removed from the surface of the ground before the fill is placed. No frozen material will be allowed in the fill area or in the embankment being constructed. Any frozen material on a partially completed fill shall be removed before placing any more fill. This frozen material shall be stockpiled outside the grading limits until thawed. Thawed material from the stockpiled frozen material may be used in the fill and embankment areas.

- 2. After occurrence of heavy rain, do not operate on previously placed material or on approved excavations until materials have dried sufficiently to prevent occurrence of excessive rutting.
- 3. Where excavations or previously placed material have been softened or eroded, remove soft and yielding material or otherwise objectionable or damaged areas and replace with compacted fill as directed by ENGINEER.
- 4. Place and compact materials in equal continuous layers not exceeding 6 inches in depth.
- 5. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content.
- 6. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification.
- 7. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- 8. Employ a placement method that does not disturb or damage other work.

G. Trench and Backfill Placement:

- 1. Backfill material, placement, and compaction shall be constructed in accordance with the specifications herein and the product manufacturer's published installation guides.
- 2. Movement of Construction Machinery. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced at Contractor's expense.

3.06 MATERIAL DISPOSAL

A. Unsuitable Material, Debris and Refuse

 Excess excavated material or material unsuitable for filling or grading operations, trees not indicated to remain on site, stumps, debris, miscellaneous refuse and other items indicated to be removed shall be disposed of off the Owner's property in compliance with local codes and ordinances.

B. Fill

1. Surplus excavated fill not required for backfilling or filling shall be disposed of off the Owner's property in compliance with local codes and ordinances.

3.07 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition.

3.08 PROTECTION OF FINISHED WORK

- A. Protect finished work from construction traffic or other means of damage.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 02621

GEOTEXTILE FOR SEPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section is applicable to the use of a geotextile for separation, as indicated in project drawings for the at-grade crossing.

1.02 RELATED WORK

- A. Section 01300, Submittals
- B. Section 01600, Delivery, Storage and Handling

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D 123 Standard Terminology Relating to Geotextiles
 - 2. D 276 Standard Test Method for Identification of Fibers in Textiles
 - 3. D 4354 Practice for Sampling of Geosynthetics for Testing.
 - 4. D 4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
 - 5. D 4439 Terminology for Geotextiles.
 - 6. D 4491 Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 7. D 4533 Test Method for Index Trapezoid Tearing Strength of Geotextiles.
 - 8. D 4632 Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 9. D 4759 Practice for Determining the Specification Conformance of Geosynthetics.
 - 10. D 4751 Test Method for Determining Apparent Opening Size of a Geotextile.
 - 11. D 4873 Guide for Identification, Storage, and Handling of Geotextiles.

1.04 SUBMITTALS

- A. Submit the following:
 - 1. Certification: The contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile. The Certification shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Geosynthetic Accreditation Institute (GAI)- Laboratory Accreditation Program (LAP)
 - 2. American Association for Laboratory Accreditation (A2LA)

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Geotextiles labeling, shipment, and storage shall follow ASTM D 4873. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- B. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- C. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the geotextile.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. US Fabrics Inc 3904 Virginia Ave Cincinnati, OH 45227 800-518-2290 513-271-4420, fax http://www.usfabricsinc.com/
- B. Substitutions: Alternative product data may be submitted by the Contractor for Engineer review for equivalent products.

2.02 MATERIALS

- A. Geotextile:
 - 1. Geotextile shall be US Fabrics, Inc. product US 205NW, or approved equivalent.

2.03 QUALITY CONTROL

A. Manufacturing Quality Control: Testing shall be performed at a laboratory accredited by GAI-LAP and A2LA for tests required for the geotextile, at frequency meeting or exceeding ASTM D 4354.

- B. Geotextile properties, other than Burst Strength and Ultraviolet Stability shall be tested by NTPEP to verify conformance with this specification.
- C. Ultraviolet Stability shall be verified by an independent laboratory on the geotextile or a geotextile of similar construction and yarn type.

PART 3 EXECUTION

3.01 PREPARATION

A. The installation site shall be prepared by clearing, grubbing, and excavation or filling the area to the design grade. The river bottom on which the fabric is to be placed must be flat. Non-natural protuberances extending up from the bottom of the river shall be removed prior to placing the fabric to avoid damaging the fabric. Non-natural objects include, but are not limited to, pieces of concrete, rebar, or demolition debris.

3.02 INSTALLATION

- A. The geotextile shall be placed loosely with no wrinkles or folds, and with no void spaces between the geotextile and the river bottom. Successive sheets of geotextiles shall be overlapped a minimum of 24 in, with the upstream sheet overlapping the downstream sheet.
- B. Prior to covering, the geotextile shall be inspected by a certified inspector of the Engineer to ensure that the geotextile has not been damaged during installation. Damaged geotextiles, as identified by the Engineer, shall be repaired immediately. Cover the damaged area with a geotextile patch which extends an amount equal to the required overlap beyond the damaged area 24 inches.

END OF SECTION

SECTION 02622

EROSION CONTROL BLANKETS

PART 1	GENERAL	

- 1.01 SECTION INCLUDES
 - A. Material and installation of erosion control blankets.

1.02 RELATED WORK

- A. Section 01300, Submittals.
- B. Section 01600, Delivery, Storage and Handling.
- C. Section 02220, Soil Erosion
- D. Section 02300, Earthwork
- E. Section 02930, Landscaping
- F. Section 02940, Site Restoration

1.03 SUBMITTALS

- A. CONTRACTOR shall submit the following to the ENGINEER:
 - 1. Product Certification: The CONTRACTOR shall provide to the ENGINEER a certificate stating the name of the manufacturer, product name, style number, and other pertinent information to fully describe the type of erosion control blanket. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.
 - 2. Manufacturer's installation instructions.
 - 3. Manufacturer's stapling pattern and instructions.

1.04 QUALITY ASSURANCE

A. CONTRACTOR shall provide adequate oversight and control of installation to assure quality of the installation.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Erosion Control Blanket labeling, shipment, and storage shall follow manufacturer's specifications. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- B. Each erosion control blanket roll shall be wrapped with a material that will protect from damage due to shipment, water, sunlight, and contaminants.

C. During storage, erosion control blanket rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the blankets.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. North American Green
 5401 St. Wendel-Cynthiana Road
 Poseyville, Indiana 47633
 1-800-772-2040
 http://www.tensarnagreen.com/
- B. Approved Equal

2.02 MATERIALS

- A. North American Green C700BN extended-term erosion control blanket or approved equal for all disturbed soil on the floodplain bench and exposed face of streambank or at locations shown on the Drawings.
- B. North American Green C700BN long-term erosion control blanket or approved equal for all disturbed soil on slopes 1:4 (vertical: horizontal) or steeper or at locations shown on the Drawings.
- C. North American Green SC150BN extended-term erosion control blanket or approved equal for erosion control on slopes flatter than 1:4 (vertical: horizontal) or at locations shown on the Drawings.
- D. North American Green S75BN short-term erosion control blanket or approved equal for erosion control on slopes flatter than 1:6 (vertical: horizontal) or at locations shown on the Drawings.
- E. Staples for biodegradable nettings shall be 6-inch biodegradable wooden stakes designed specifically for securing erosion control blankets to soil.

2.03 QUALITY CONTROL

A. All materials shall be free of manufacturing defects and damages incurred during shipping, handling, and storage. Defective or damaged products shall be replaced at CONTRACTOR's expense.

PART 3 EXECUTION

3.01 PREPARATION

A. Final grade shall be achieved in installation area prior to installation.

B. Coordinate installation with Grading and Landscaping. Installation site shall receive topsoil and applicable seeding prior to installation.

A.02 INSTALLATION

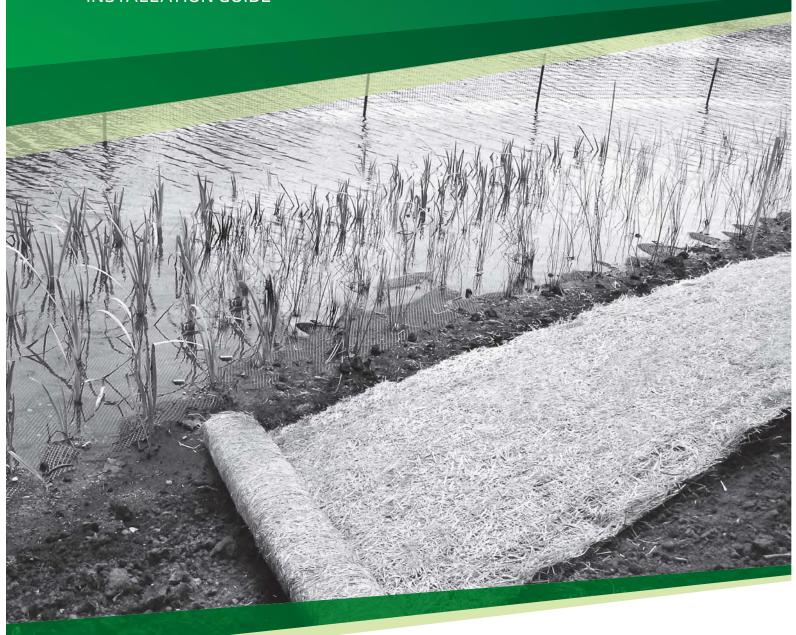
- A. North American Green C700BN extended-term erosion control blanket or approved equal shall be installed on all disturbed soil on the floodplain bench and exposed face of streambank or at locations shown on the Drawings. Contractor shall install ECB perpendicular to stream channel using stapling pattern D as described in manufacturer's installation instructions.
- B. North American Green C125BN long-term erosion control blanket or approved equal shall be installed on all disturbed soil on slopes 1:4 (vertical: horizontal) or steeper or at locations shown on the Drawings. Contractor shall install ECB perpendicular to stream channel using stapling pattern C as described in manufacturer's installation instructions.
- C. North American Green SC150BN extended-term erosion control blanket or approved equal shall be installed on erosion control on slopes flatter than 1:4 (vertical: horizontal) or at locations shown on the Drawings. Contractor shall use stapling pattern B as described in manufacturer's installation instructions.
- D. North American Green S75BN short-term erosion control blanket or approved equal shall be installed on erosion control on slopes flatter than 1:6 (vertical: horizontal) or at locations shown on the Drawings as a general mulch blanket or erosion control measure. Contractor shall use stapling pattern A as described in manufacturer's installation instructions.
- E. Install all erosion control blankets per manufacturer's specifications.
- F. Install erosion control blanket after topsoil placement and seeding.
- G. Erosion control blanket shall be installed flat, without buckles and slack, to maintain continuous contact with soil surface.
- H. Erosion control blanket shall be installed with end and edge overlaps according to manufacturer's installation instructions.
- I. Erosion control blanket shall be installed with grade tie-ins and terminations according to manufacturer's installation instructions. Loose or stapled free ends are not acceptable.
- J. Use two full roll widths with overlap along overbank areas of new stream channel, to establish a minimum coverage width of ten feet.

END OF SECTION



ROLLMAX™ ROLLED EROSION CONTROL

INSTALLATION GUIDE







RollMax[™] Installation Guidelines:

North American Green is the world's leading provider of performance-guaranteed erosion control solutions. For more than 25 years, our line of erosion and sediment control products has kept our customers on solid ground. Our short-term and long-term Erosion Control Blankets (ECBs) and Turf Reinforcement Mats (TRMs) keep you one step ahead of just about any erosion challenge.

North American Green provides everything you need to know for quick, accurate erosion control installation tailored to your site. From start to finish, the North American Green® RollMax System™ product installation instructions are based on extensive research and field-proven techniques to ensure project success. The following pages offer instructions and guidelines for several scenarios you may encounter during the installation of the RollMax System.

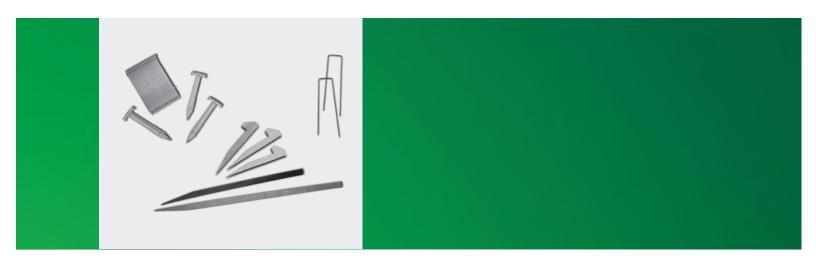
EXPERIENCE YOU CAN RELY ON

We are the industry leader when it comes to providing comprehensive erosion and sediment control and turf reinforcement solutions. We have developed integrated systems and products with the sole objective to ensure absolute customer satisfaction. Our products are backed by the most thorough quality assurance practices in the industry. In addition, we provide comprehensive design assistance for every North American Green system.

For additional installation assistance with the RollMax System, please visit **www.nagreen.com**, e-mail **info@nagreen.com**, or call **800-772-2040** and we will be happy to put you in touch with an erosion control specialist who can assist you.







Installation Made Easy

When under the pressure of severe conditions, even the best erosion control products can't function to their full potential without proper installation and anchoring. North American Green supplies a wide variety of fastener options for nearly every application and soil type.

For use in cohesive soils, wire staples are a cost-effective means to fasten RollMax™ System Rolled Erosion Control Products (RECPs). Available in 6 in., 8 in., 10 in. and 12 in. lengths, our U-shaped staples reach various depths to ensure adequate pull-out resistance. For installation using our handy Pin Pounder installation tool, 6 in. V-top staples or 6 in. circle top pins are available.

Our biodegradable BioStakes® are available in 4 in. and 6 in. lengths and provide an environmentally friendly alternative to metal staples. For an even more durable, deeper reaching yet all-natural anchoring option, our wood EcoStakes® are available in 6 in., 12 in., 18 in. and 24 in. lengths.

For severe applications needing the ultimate, long-lasting hold, try our 12 in. and 18 in. rebar staples, our 12 in. plastic ShoreMax® stakes, or our complete line of percussion earth anchors. The earth anchors reach deep into the soil strata to offer enhanced anchoring in the worst conditions. Our variety of earth anchors are designed for durability and holding power under extreme hydraulic stresses and adverse soil conditions.

STAPLE PATTERNS

Proper staple patterns must be used to achieve optimal results in RECP installation. We recommend the following general stapling patterns as guidance for use with our RECPs as seen in (Figure 1). Site-specific staple pattern recommendations based on soil type and severity of application may be acquired through our Erosion Control Materials Design Software (ECMDS®), www.ecmds.com.

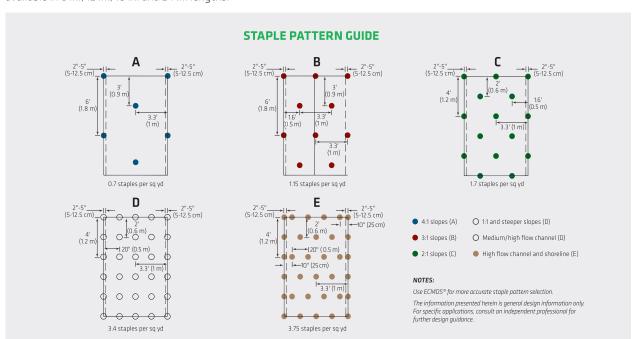
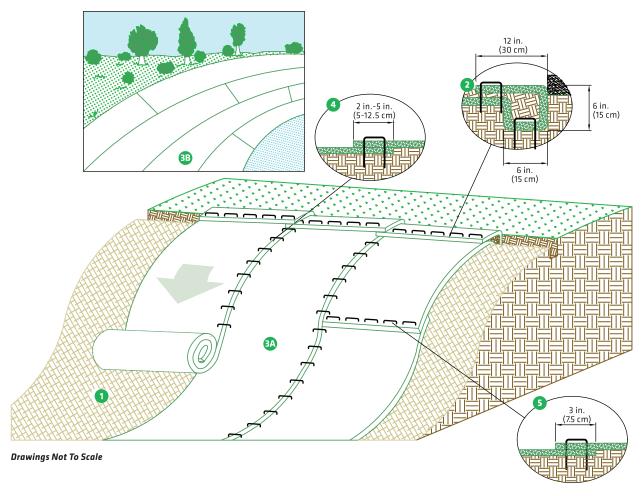


FIGURE 1

Slope Installation

The following slope guide outlines general recommendations for installing RollMax™ System temporary and/or permanent RECPs on sloping applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the slope severity.



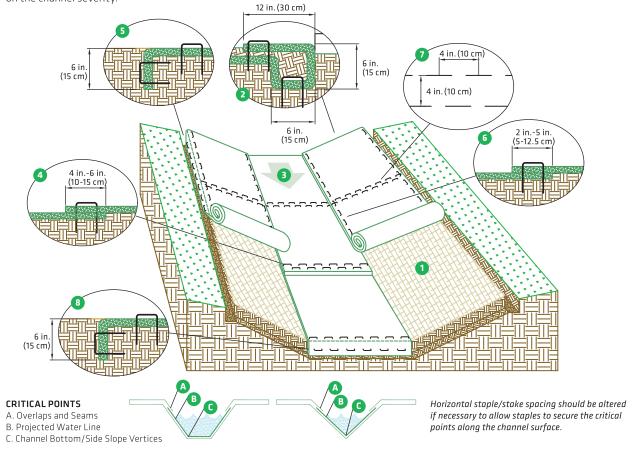
SLOPE INSTALLATION STEPS

- **1.** Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- 2. Begin at the top of the slope by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- 3. Roll the RECPs (3A) down or (3B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- **4.** The edges of parallel RECPs must be stapled with an approximately 2 in.-5 in. (5-12.5 cm) overlap depending on the RECP type.
- 5. Consecutive RECPs spliced down the slope must be endover-end (shingle style) with an approximate 3 in. (7.5 cm) overlap. Staple through overlapped area, approximately 12 in. (30 cm) apart across entire RECPs width.*

*NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Channel Installation

The following channel guide outlines general recommendations for installing RollMax System temporary and/or permanent RECPs in concentrated flow applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the channel severity.



Drawings Not To Scale

CHANNEL INSTALLATION STEPS

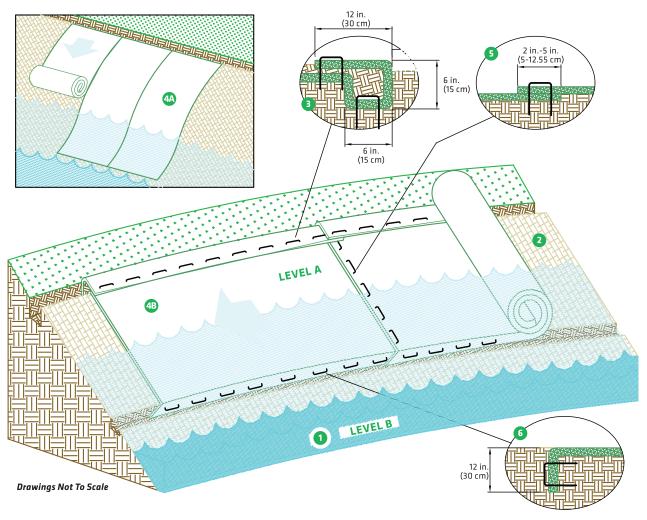
- Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- 2. Begin at the top of the channel by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. For supplemental scour protection, use RevetMax™ System ShoreMax® Mat at the channel/ culvert outlet as needed. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- 3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.

- 4. Place consecutive RECPs end-over-end (shingle style) with a 4 in.-6 in. (10-15 cm) overlap. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center to secure RECPs.
- 5. Full-length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.
- 6. Adjacent RECPs must be overlapped approximately 2 in.-5 in. (5-12.5 cm) (depending on RECP type) and stapled*
- 7. In high flow channel applications a staple check slot is recommended at 30 to 40 ft (9-12 m) intervals. Use a double row of staples staggered 4 in. (10 cm) apart and 4 in. (10 cm) on center over entire width of the channel.
- 8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.

*NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Shoreline Installation

Below are recommendations for installing RollMax System temporary and/or permanent RECPs along shoreline and stream bank applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the bank severity.



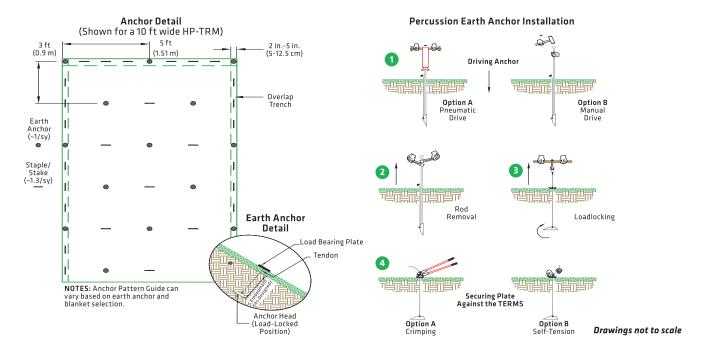
SHORELINE/STREAMBANK INSTALLATION STEPS

- **1.** For easier installation, lower water level from Level A to Level B before installation to allow bottom trenching.
- **2.** Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
- **3.** Begin at the top of the shoreline by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- **4.** Roll RECPs either (A) down the shoreline for long banks (top to bottom) or (B) horizontally across the shoreline slope. RECPs will unroll with appropriate side against the

- soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- 5. The edges of all horizontal and vertical seams must be stapled with an approximately 2 in.-5 in. (5-12.5 cm) overlap. In streambank applications, seam overlaps should be shingled in the predominant flow direction.
- 6. The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12 in. (30 cm) deep x 6 in. (15 cm) wide anchor trench. Anchor the RECPs with a row of staples/stakes spaced approximately 12 in. (30 cm) apart in the trench. Backfill and compact the trench after stapling (stone or soil may be used as backfill). For installation at or below normal water level, use of a ShoreMax Mat on top of the RECP or geotextile may be recommended. Bottom anchor trench can be eliminated when using a ShoreMax Mat over RECP along the bottom edge.

NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Special Installation Instructions



ANCHORING DETAIL

Consult the *RollMax™ Turf and Earth Reinforced Mat Systems* (*TERMS*) *Installation Guide* for details about using earth anchors with RollMax RECPs. The performance of ground anchoring devices is highly dependent on numerous site/project specific variables. It is the responsibility of the project engineer and/or contractor to select the appropriate anchor.

- 1. Staples and/or stakes should be at least 6 in. (15 cm) in length and with sufficient ground penetration to resist pullout. Longer staples and/or stakes may be needed in looser soils.
- The percussion earth anchor assembly includes an anchor head, a tendon, a faceplate, and an end-piece device.
 Consult Earth Anchor specification for detailed information on assembly components and associated pull-out strength.

PERCUSSION EARTH ANCHOR INSTALLATION

- Insert the drive rod into the assembly's anchor head then use either a sledge hammer or a vibratory hammer to drive the anchor to the desired depth.
- After the desired anchor depth is achieved, retract the drive rod.
- **3.** Lock the anchor assembly by swiftly pulling the cable upwards until the anchor head rotates as signaled by sudden resistance to pulling. A hooked setting tool may be used to aid in this step.
- **4.** Secure the faceplate to the HP-TRM surface by locking the end-piece. If using a copper or aluminum stop, crimp the ferrule to secure. If using a self-tensioning end-piece (grip or wedge grip) set by simply tightening the end-piece against the faceplate. If needed, cut the remaining cable to desired length.

SEEDING AND VEGETATING

When using a Composite Turf Reinforcement Mat (C-TRM) with fiber components:

- Pre-seed prepared soils prior to the installation of the C-TRM. Install matting as directed. C-TRM does not require soil infill or a top dressing of seed. Overseeding may be done as a secondary form of seeding.
- 2. Sod may be installed in place of seeding on top of the C-TRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.

When using a woven HP-TRM:

- 1. Install the HP-TRM as directed prior to seed and soil filling.
- 2. Place seed into the installed HP-TRM. After seeding, spread a layer of fine soil into the mat. Using the flat side of a rake, broom or other tool, completely fill the voids. Smooth soil-fill in order to just expose the top of the HP-TRM matrix. Do not place excessive soil above the mat.
- **3.** Additional seed, hydraulic mulching, or the use of a temporary Erosion Control Blanket (ECB) can be applied over the soil-filled mat for increased protection.
- 4. Sod may be installed in place of seeding. Install HP-TRM, and soil-fill as outlined above. Place sod directly onto the soil-filled HP-TRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.
- **5.** Consult with a manufacturer's technical representative for installation assistance if unique conditions apply.



North American Green 5401 St. Wendel-Cynthiana Road Poseyville, Indiana 47633

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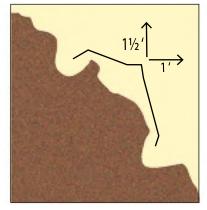
Coir Mat Installation Effective Erosion Control

The area selected for geotextile application should be graded uniformly by removing obstructions such as wood and clods, so that coconut geotextile comes in complete contact with soil. Seeds that adapt to the soil type and region should be mixed with manure or compost and spread uniformly along the slope. Compost or manure application is needed only if the soil is poor and the vegetation is required to grow in a shorter period of time.



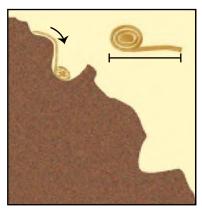
Seeding

For coir blankets or mats with small mesh/open space, seeding should be done prior to installation of the mat. For open weave mats and geotextile blankets with more mesh openeing space, seeding can be done after installation.



Trenching

A trench I-I/2 feet deep and I foot wide should be made at the top and bottom of the slope with the purpose of securing the mat with back-filled material.



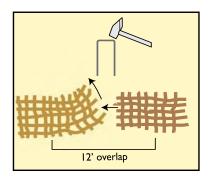
Measuring

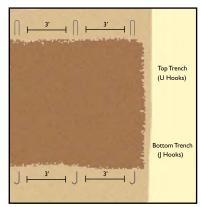
Cut the chosen mat/geotextile product into the required length for the project. The cut mats are unrolled from the top and laid along the slope (in the direction of the water flow). While measuring the project site, care should be taken to ensure that the mat is not stretched and that the measurement allows for contact of the coconut geotextile with soil.

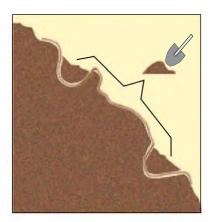


Coir Mat Installation Effective Erosion Control

Proper installation is key to the success of erosion prevention products. If installed improperly, even the best stormwater control and erosion prevention materials fail to serve their purpose. Therefore, importance should be given to secure staking, adequate fabric overlap, proper trenching, and skilled construction supervision during installation.







Review the <u>Coir Mat Product Flyer</u> for more information about coir mat erosion control.

Overlapping

It is recommended that coconut fiber geotextiles overlap a minium of 6 to 8 inches between adjacent parallel rolls, laid along the width, secured by staples or stakes. When mats are joined down the slope, place the upper mat over the lower mat end with a 12-inch overlap, and anchor with 2 staggered rows of staples with 12-inch spacing.

Anchoring

Once the mat has been laid out, it should be secured in the top trench by gauge eleven (11) "U" shaped metal staples. Wooden stakes can serve the same purpose. They are usually pegged at a gap of 36 inches (one meter). Keep a minium distance of 2 inches from the edge of the blanket to the center of the staples or stakes.

The open end of the mat at the lower end of the slope should also be secure by pegging "J" hooks to the bottom trench at about 36" (one meter), covered with cut fill.

After securing the top and bottom ends, the top and bottom trenches should be filled back with soil. Care should be taken that soil is compacted properly and no loose gaps exist which may cause rain water to go seep through the mat and flow down the slope.



SECTION 02930

LANDSCAPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. All labor, materials, and equipment necessary to provide finished site revegetation. Work includes planting preparation, topsoil, seeding, planting accessories, live stakes, and tree and shrub planting installation.

1.02 RELATED WORK

- A. Section 02220 Soil Erosion Control
- B. Section 02300 Earthwork
- C. Section 02622 Erosion Control Blankets
- D. Section 02931 Landscape Maintenance
- E. Section 02932 Landscape Performance and Warranty

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Plant Stock: This includes any live plant material that is to be introduced to Site regardless of its form or maturity. Plant stock may be referred to as woody, such as trees, shrubs, and some varieties of vines; or herbaceous, such as forbs, grasses, sedges, and some varieties of vines. Immature plant stock may be in form of germinated and ungerminated seeds. Mature herbaceous plant stock is generally in form of potted or containerized whole plants. Mature woody plant stock is generally in form of containerized, balled and burlapped, or bare root trees and shrubs.
- B. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- C. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material.
- D. Product Purchase and Delivery Documentation: Product order sheet and delivery manifest

1.05 SUBMITTALS

A. General: Meet requirements of Section 01300

- B. All substitutions, materials, or execution shall be approved by the OWNER/ENGINEER, in writing, a minimum of 1 month prior to installation. The OWNER/ENGINEER reserves the right to require a sample of substituted material(s) prior to approval for construction.
- C. Landscape Plan Submittals: CONTRACTOR to provide ENGINEER one month prior to initiation of landscape work and shall include:
 - 1. All relevant permits, licenses, and authorizations.
 - 2. Written detail for all planting methods, schedule and certificates.
 - 3. Live stakes: Submit live stake source and specifications.
 - 4. Plant Stock Certificates from woody plant stock suppliers which shall include:
 - a. Botanical name, including cultivar, and common name.
 - b. Quantity.
 - c. Size.
 - d. Type (B&B, Container, Bare Root...etc.)
 - e. Origin (Location grown).
 - f. Name, address, and phone number of supplier.
 - 5. Seed Certificates from seed suppliers which shall include:
 - a. Botanical names and common names.
 - b. Net weight.
 - c. Percentage of seeds by weights.
 - d. Purity of seed.
 - e. Amount of undesirable plant seeds present in mixture.
 - f. Germination percentage.
 - g. Date of production.
 - h. Date of packaging.
 - i. Location of packaging.
 - j. Name, address, and phone number of supplier.
 - 6. Erosion Control Blanket manufacturer and specifications.
 - 7. Name and address of mulch supplier(s) and a small physical sample of the material to be used.

1.06 QUALITY ASSURANCE

A. Plant Stock Suppliers:

1. Obtain commercially available plant stock only from supplier or suppliers capable of providing quantities adequate to complete this project. Use plant stock that has been raised in Southeast Michigan nurseries under similar climatic conditions. When local sources are not available, plant stock shall originate within the same approximate latitude and the same USDA hardiness zone based on climatic characteristics. Plants shall have grown to maturity under climatic conditions that are similar to those founds at site. Contractor is required to obtain data requested for required submittals from suppliers prior to use of stock. Suppliers shall be located in Southeast Michigan, when possible, and not outside of the Great Lakes ecoregion, which includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois,

Indiana, and Ohio. No plant stock or seeds shall be accepted from outside the Great Lakes Ecoregion without prior written approval from the ENGINEER/OWNER.

B. Contractor Qualifications:

1. All landscaping work shall be performed by a contractor experienced in planting and establishing the specified plant stock herein. Personnel used to perform installation of plant materials shall have occupational experience in landscape planting projects similar to the scope and size of this project.

C. Regulatory Requirements:

- 1. Perform all work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- 2. Adhere to all federal, state, and local regulations for all phases of the project regarding erosion and sediment control measures.
- 3. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.
- 4. All plant stock, original and replacement, shall comply with state and federal Laws and Regulations with respect to inspection for plant diseases and insect infestations. Quality and size shall conform to the current edition of *American Standard for Nursery Stock* (ANSI Z60.1) as published by AmericanHort, formed in 2014 with the consolidation of the American Nursery & Landscape Association and OFA—The Association of Horticultural Professionals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Pack, handle, and transport plant stock in a manner that is customary in good trade practice to ensure proper transport and arrival of plant stock.
- B. Anti-Desiccant: Spray all evergreen or deciduous plant material as needed to protect the plant stock from desiccation during storage.
- C. Furnish standard products in unopened manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer.
- D. Store plant stock in a manner to prevent damage or deterioration. Plant stock stored for excessive lengths of time or at a time of year which is not suitable by standard horticultural practice shall not be accepted for planting. Store products with protection from weather or other conditions that would damage or impair the effectiveness of the product.
- E. Store plant stock in aboveground locations in non-construction areas approved by OWNER/ENGINEER if not transplanted directly. Keep woody and herbaceous plant stock stored cool and sheltered from drying effects of direct sunlight, unless specifically required by plant stock, and prevailing winds. Place sufficient soil or mulch about roots of plant stock to protect them from desiccation and to provide nourishment during storage. Supply adequate water to maintain plant stock in a healthy and vigorous state suitable for transplanting.

- F. The following conditions shall render Plant Stock Unacceptable:
 - 1. Plant stock that arrives dried out, exposed to excessive heat, wind burn or that has been in storage for extended periods of time.
 - 2. Plant stock displaying mold, decay, or physical damage.
 - 3. Seeds in wet, damaged, or unlabeled packaging/containers are not acceptable.
- G. Deliver and store seed mixtures in original sealed containers. Store seeds in weatherproof and rodent-proof enclosures. Do not sue seed seed that becomes wet, moldy, or otherwise damaged during storage.
 - 1. Seed container labels should have the following minimum information:
 - a. Mix/Catalog name matching specified seed mixes.
 - b. Species botanical name and common name.
 - c. Net weight.
 - d. Percentages of seeds by weight.
 - e. Percentage of germination.
 - f. Amount of undesirable plant seeds present in mixture.
 - g. Pure Live Seed (PLS)
 - h. Date of production.
 - i. Name and address of supplier.
- H. The OWNER/ENGINEER shall reserve the right to refuse any plant material that is unacceptable upon delivery to site.
- I. Changes and/or substitutions of plant materials from what is specified on the Drawings are unacceptable without prior written authorization from OWNER/ENGINEER.
- J. All plant materials shall be inspected and approved by OWNER/ENGINEER prior to installation on-site.
- K. Do not lift or handle plants by tops, stems or trunks at any time. Do not bind or handle plants with wire or rope at any time.

1.08 SEQUENCING AND SCHEDULING

- A. Installation
 - 1. Installation of plant stock per the contract documents and this specification section.
- B. Maintenance Period per Section 02931.
- C. Warranty Period per section 02932.

PART 2 – PRODUCTS

2.01 IMPORTED SOILS

A. Topsoil: Refer to Section 02216 for topsoil specifications.

2.02 PLANT STOCK

- A. Furnish plant species and sizes as indicated on the Plans. Substitutions in plant species or size can be made only by written approval of the OWNER/ENGINEER.
- B. Plant stock shall be true to name as labeled. Plant species must be of native stock; horticultural cultivars will not be accepted.
- C. Use commercially available plant stock that has been raised in local (Southeast Michigan) nurseries under similar climatic conditions. No plant stock shall be accepted from outside the Great Lakes ecoregion (includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois, Indiana, and Ohio) without prior written approval from the OWNER/ENGINEER.
- D. Balled and burlapped trees shall be field grown in native soil for at least 12 months prior to harvest.
- E. Digging: Dig ball and burlap (B & B) plants with firm, natural balls of earth of diameter meeting requirements of ANSI Z60.1-2014, and of sufficient depth to include the fibrous and feeding roots.
- F. Plants shall be free of insects and diseases.
- G. Plants shall exhibit a balanced growth habit and shall show appearance of healthy growth and vigor.
- H. Trees shall have intact root balls with original earth firmly in place around roots. Non-containerized trees and shrubs shall be wrapped tightly and securely with untreated, biodegradable burlap and, if necessary, shall be tied securely with a biodegradable natural fiber twine such as jute to provide further protection for root ball. Plants balled using non-biodegradable burlap will not be accepted. Plants balled using wire baskets are acceptable given that the wire is cut back from the top and down the sides once the tree has been lowered into the hole.
- I. Acceptable nurseries include, but are not limited to:
 - 1. Marine City Nursery Co. China Twp, Michigan (810) 765-5533
 - 2. Lodi Farms, Ltd. Ann Arbor, Michigan (734) 665-5651
 - 3. Possibility Place Nursey Monee, Illinois (708) 534-3988
- J. Live Stakes: Shall be cuttings from live shrubs from species identified on Drawings ranging from 2 to 4 feet in length and ½ to 1½ inches in diameter. Stem cuttings shall be taken at least 24" from the branch tip. The top cut shall be ½" above a leaf bud. The bottom cut shall be ½" below a leaf-bud, and made at a 45 deg. angle. The basal ends of all cuttings must be marked clearly so installer can easily determine which end to plant. Cuttings shall be harvested when plants are dormant and must be kept covered and moist during transport and storage. Soaking the stakes before plantings greatly increases survival and growth rate. All cuttings shall be planted during dormancy.

2.03 SEED STOCK

- A. Use commercially available native seed that has been raised in local (Southeast Michigan) nurseries under similar climatic conditions. No seed shall be accepted from outside the Great Lakes ecoregion (includes all of Michigan, Wisconsin, and Minnesota, and the northern half of Illinois, Indiana, and Ohio) without prior written approval from the OWNER/ENGINEER.
- B. Native seed mixtures shall include species and pounds per acre (LB/AC) as indicated on the plans.
- C. Seed mixtures shall be blended by supplier at specified ratios of various species and shall be guaranteed by supplier as being true to specifications.
- D. It is acceptable to use more than one seed supplier if necessary to fulfill the specified species list, provided the rates in LB/AC are retained.
- E. Seed mixes shall be "clean" according to industry quality standards. Seed mixes shall not contain foreign debris or insects.
- F. Seed mixes shall contain no more than 1 percent by weight of undesirable plants species determined by standard purity tests, including but not limited to the species in Table 1.

Table 1. Undesirable plant species

Scientific Name	Common Name
Agrostis gigantea	redtop
Ailanthus altissima	tree-of-heaven
Alliaria petiolata	garlic mustard
Ambrosia artemisiifolia	common ragweed
Ambrosia trifida	giant ragweed
Arctium minus	common burdock
Barbarea vulgaris	yellow rocket
Berberis thunbergii	japanese barberry
Berteroa incana	hoary alyssum
Bolboschoenus maritimus	bulrush
Brassica nigra	black mustard
Scientific Name	Common Name
Celastrus orbiculatus	oriental bittersweet
Centaurea stoebe	spotted knapweed
Chenopodium album	lambs-quarters
Cirsium arvense	canada thistle
Cirsium vulgare	bull thistle
Convallaria majalis	lily-of-the-valley
Convolvulus arvensis	field bindweed
Cynodon dactylon	bermuda grass
Cyperus esculentus	yellow nutsedge

Scientific Name	Common Name
Daucus carota	queen-annes-lace
Digitaria ischaemum	smooth crab grass
Digitaria sanguinalis	hairy crab grass
Dipsacus fullonum	wild teasel
Dipsacus laciniatus	cut-leaf teasel
Elaeagnus umbellata	autumn-olive
Elymus repens	quack grass
Fallopia convolvulus	false buckwheat
Fallopia japonica	japanese knotweed
Frangula alnus	glossy buckthorn
Hesperis matronalis	dames rocket
Ipomoea purpurea	common morning-glory
Ligustrum vulgare	common privet
Lonicera maackii	amur honeysuckle
Lonicera tatarica	tartarian honeysuckle
Lysimachia nummularia	moneywort
Lythrum salicaria	purple loosestrife
Melilotus albus	white sweet-clover
Melilotus officinalis	yellow sweet-clover
Morus alba	white mulberry
Pastinaca sativa	wild parsnip
Phragmites australis	reed
Rhamnus cathartica	common buckthorn
Robinia pseudoacacia	black locust
Rosa multiflora	multiflora rose
Rumex crispus	curly dock
Scilla luciliae	glory-of-the-snow
Sinapis arvensis	wild mustard
Sonchus arvensis	perennial sow-thistle
Sorghum halepense	johnson grass
Stellaria media	common chickweed
Scientific Name	Common Name
Tanacetum vulgare	garden tansy
Taraxacum officinale	common dandelion
Vincetoxicum nigrum	black swallow-wort

- G. Seed shall contain no federal or state listed noxious or invasive weeds (an amount within the tolerance of zero percent) as determined by a standard purity test.
- H. Seed mix shall contain no Federal or State listed threatened or endangered plant species, unless otherwise authorized by ENGINEER.

- I. Seed mix substitutions can be made only by written approval of the OWNER/ENGINEER.
- J. Acceptable nurseries include, but are not limited to:
 - 1. Genesis Nursery Tampico, Illinois (815) 438-2220
 - 2. Michigan Wildflower Farm Portland, Michigan (517) 647-6010
 - 3. Ernst Seed Mercer, Pennsylvania (800) 873-3321

2.04 MULCH

- A. Mulch for all woody plant stock shall be composed of shredded hardwood bark. Mulch shall not contain any foreign material, debris, or compounds that may be detrimental to plant growth.
- B. Obtain OWNER/ENGINEER's approval prior to use of other types of mulch.

2.05 BACKFILL SOIL

A. Backfill soil for planting pits shall consist of 50% excavated material and 50% imported topsoil and shall be finely divided, loose, and free of clods. Lumps, stone, litter, and other foreign non-organic material larger than 1 inch shall be removed. Non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes shall also be removed. If additional soil is required, topsoil shall be used. Refer to Section 02216 for topsoil specifications.

2.06 ACCESSORIES

- A. Erosion Control Blanket: Refer to Section 02622 Erosion Control Blanket for soil erosion control blanket specifications.
- B. CONTRACTOR to wrap trees to protect against damage due to wildlife.

2.07 HERBICIDES AND PESTICIDES

- A. Any herbicide or pesticide intended for use on site must be approved by the OWNER/ENGINEER prior to use.
- B. Herbicides shall have Glyphosate as the primary active ingredient, unless otherwise approved by the OWNER/ENGINEER. Herbicides shall be approved for aquatic use where applicable.
- C. The use of pesticides is not recommended and will only be approved under extreme circumstances. Under no circumstances will pesticide application be allowed where the risk of surface water contamination exists unless the pesticide is approved for aquatic use and the Contractor has obtained the necessary permits to apply the approved herbicide in an aquatic environment.

2.08 EQUIPMENT

- A. Seeding Equipment: Obtain OWNER/ENGINEER's approval prior to use. The following requirements apply to specific equipment that may be used in seeding activities:
 - 1. Tractors and Crawlers: Shall have low-pressure flotation tires or broad tracks so that soil compaction is minimized in areas of Site preparation or seeding activities.
 - 2. Disc: In good repair with sound unbroken blades; weighted as necessary to achieve required tillage depth.
 - 3. Rollers or Cultipackers: Minimum 6-inch diameter rollers; of sufficient weight to pulverize clods of soil. To be used following rough grading on subgrade soils as a preparation for installation of seedbed soils.
 - 4. Airway Shattertyne: Roller tynes shall be 10 to 12-inch OD so that topsoil or organic-rich common fill and surface mulches are mixed into top 2 to 4 inches of subgrade. Weighting of this equipment should be minimal so as to avoid compaction of organic-rich common fill.
 - 5. Spinning Disc Seeder: When spinning disc seeders are used, mix individual seeds comprising mixture with an appropriate dispersal medium such as damp sterile sand or sawdust prior to sowing.
 - 6. Tractor-drawn or Mounted Seeders: Provide with a calibrated adjustable gate opening providing uniform flow over a width adapted to work and able to drop seed directly on prepared seedbed. Obtain OWNER/ENGINEER'S approval prior to using this system. Equipment shall be equipped with low pressure/high flotation tires or wide tracks which shall result in minimal disruption and compaction of graded wetland surfaces.
 - 7. Broadcast Seeders: Hand methods (cyclone seeders) and mechanical tractor-drawn methods.
 - 8. No-Till Planters and Drills: Rangeland type grass drills and no-till rangeland grass drill planters shall be designed specifically for seeding native grasses and forbs.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

- A. Submit Landscaping Plan Per section 1.04.C of this specification.
- B. Incorporate sequencing and scheduling aspects of Sediment and Erosion Control Plan, refer to Section 02220 Soil Erosion Control.
- C. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials on or adjacent to the site of the work. Schedule topsoil placement to permit seeding and planting operations under optimum growing conditions during specified planting time frames.
- D. Plant stock shall be installed according to the following time frame guidelines unless otherwise approved by ONWER/ENGINEER:
 - 1. Plant stock March 1 through May 15, and October 15 through November 30.
 - 2. Seeding: April 20, or as soon thereafter as soil is free of frost and in workable condition, through June 15, and September 15 through November 1.

3.02 PLANTING - GENERAL

- A. Do not proceed with planting in any area until necessary modifications and/or corrections determined by review completed and approved by OWNER/ENGINEER. Begin installation within timeframe as approved by OWNER/ENGINEER. If conditions detrimental to installation or plant growth or safety of planting crew are encountered, immediately notify OWNER/ENGINEER prior to planting.
- B. Maintain Sediment and Erosion Control Plan in conformance with applicable regulations and as approved by OWNER/ENGINEER. Refer to Section 02220 Soil Erosion Control.
- C. Protect finish-graded areas from rutting, impressions, or other damage by vehicular or worker traffic and erosion.
- D. Re-till areas compacted by construction equipment to a minimum depth of 6 inches. Rework and restore any areas compacted or damaged by rain, traffic, or other cause, prior to planting.

E. Environmental Requirements

- 1. Do not conduct seeding or planting operations when soil is frozen. Materials shall not be applied over snow or ice.
- 2. Do not conduct seeding or planting when the ground surface is wet or otherwise unable to support the equipment or workers necessary to conduct the seeding or planting without causing rutting, impressions, erosion, or other damages to final-graded areas and prepared seed bed.
- 3. Do not undertake seeding and planting activities during stormy weather when excessive precipitation may result in washing of seed away from location intended.
- 4. Do not install plant materials during periods of temperature extremes when atmospheric temperature may drop below 36 degrees F or rise above 90 degrees F.
- 5. Do not apply seeds, seed mixtures, slurries with seeds, or mulch when wind conditions are such that materials would be carried beyond designated areas or materials would not be uniformly applied.
- 6. When drought, excessive moisture, or other unsatisfactory conditions prevail, as determined by the OWNER/ENGINEER, the CONTRACTOR will stop work.

3.03 PLANT STOCK PLANTING

- A. Perform planting within time guidelines specified. Install species at locations as indicated on the drawings. For emergent habitat areas, review proposed plant locations and current water depths with OWNER/ENGINEER prior to planting. Adjustments may be made by the OWNER/ENGINEER based on water depths at time of planting.
- B. Obtain OWNER/ENGINEER's approval of soil bed preparation, Plant Stock Certificates, and layout before planting. No plant material shall be installed until it has been inspected and approved for planting by the OWNER/ENGINEER.

- C. The CONTRACTOR shall verify all plant locations with ENGINEER prior to installation. The ENGINEER reserves the right to adjust plant material locations to meet field conditions, without additional cost to the OWNER.
- D If obstructions are encountered that are not indicated, do not proceed with planting operations until alternative plant locations have been selected and approved in writing by the OWNER/ENGINEER. Where location or spacing dimensions are not clearly shown, request clarification by the OWNER/ENGINEER.
- E. If drainage conditions are questionable, the CONTRACTOR shall bring it to the attention of the OWNER/ENGINEER. Adjustment in planting pit locations or elevations to accommodate drainage concerns shall be approved by the OWNER/ENGINEER. Surface drainage problems discovered after plant material is installed shall be corrected to the satisfaction of the OWNER/ENGINEER at the CONTRACTOR's expense.
- F. Excavate planting pits as shown on the plans. Scarify sides of the pit prior to planting. Planting pits shall be dug deep enough to all the top of the root ball to be flush with final grade such that the tree installation does not change the final grade elevation on all surfaces that receive flowing water a part of the project design and as shown on Drawings. Never dig planting pits such that the top of the root ball is below final grade once installed.
- G. Remove non-biodegradable containers prior to planting. Remove plants from containers without disturbing the root ball. All circling roots (root bound) shall be cut and straightened to ensure correct directional root growth after planting.
- H. For balled and wrapped plant stock remove burlap and ropes from top 1/3 of ball after placing plant in pit. If metal baskets are present, remove baskets prior to installation unless this practice voids the plant material warranty.
- I. All plants shall be set plumb and straight, and centered in the pit. Plant root masses shall be in relation to finish grade as shown on the plans.
- J. After positioning plant, place specified backfill soil around root mass and compact lightly. When pit is 2/3 full, add water to soak thoroughly, then backfill to surrounding grade. Gently tamp soil firm.
- K. Create a continuous saucer around the perimeter of each plant pit to aid retention of irrigation water as shown on the plans.
- L. Water plant stock again immediately after planting such that root zone is thoroughly soaked and air pockets are removed.
- M. Any unused soil shall be removed from planting area to preserve finished grades.
- N. Any tree thrown out of plumb by wind action or other causes shall be replanted by loosening the soil around the root system and re-plumbing the tree or shrub by adjusting the position of the root system. Adjustment shall not be made by pushing, pulling, or restraining the trunk or stem. If, in the opinion of the OWNER/ENGINEER, damage to

the root system has occurred as a result of re-plumbing, the tree or shrub shall be replaced by the CONTRACTOR.

- O. Provide specified mulch for woody plants. Mulch plants within 24 hours of planting or as directed by OWNER/ENGINEER. Do not mulch trees being planted in areas that receive flowing water by design as shown on Drawings.
- P. Prune each tree and shrub upon completion of planting to remove dead, broken, or injured branches and to compensate for any root loss incurred during transplanting. Retain natural shape of tree and leave as little stub as possible. Never cut leader. Cuts not made at the base of a branch shall be at a 45 degree angle and approximately ½ inch above a live leaf or bud. Pruning shall be done with a sharp tool to produce a clean cut without bruising or tearing the bark. Pruning shall be carried out in accordance with accepted arboricultural practices for size and species of vegetation.

3.04 SEEDING

- A. Perform seeding within time guidelines specified.
- B. All areas intended for seeding shall be free of weeds and other vegetation. Where necessary, infested areas shall be treated by the CONTRACTOR with an approved selective herbicide as approved by OWNER/ENGINEER.
- C. Seedbed soil shall be finely divided, loose, and free of clods. Lumps, stone, litter, and other foreign non-organic material larger than 1 inch shall be removed. Non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes shall also be removed.
- D. Use seeding rates as indicated on the plans unless alternative mixtures and application formulas are reviewed and approved by OWNER/ENGINEER.
- E. Follow seed manufacturer recommendations for seed installation. Seeding method selected shall ensure complete coverage of designated area. Re-seed areas with gaps in seeding at no additional cost to OWNER.
- F. Where obstacles, saturated soils, slopes, or other site conditions make use of mechanical seeding equipment impractical, hand broadcast techniques shall be used.
- G. For hand broadcasting, incorporate seed into soil to a maximum depth of ¼ inch after broadcasting by raking soil or chain dragging, then lightly compacting seedbed with roller or approved equivalent.

3.05 LIVESTAKES

- A. Plant livestakes as shown on Plans or as directed by ENGINEER.
- B. If not planted during normal dormant season live stakes must be kept moist and in cold storage until time of planting.

- C. Plant livestakes perpendicular to the ground surface. Install only when ground is not frozen. Push into ground by hand where possible. If necessary, create a pilot hole. Use dead blow hammer as needed.
- D. Orient the stake up, bury 2/3rds to 4/5ths of stake in ground, and allow at least 2 lateral buds to remain above ground. Firmly pack soil around each stake.
- E. Remove any dead or broken material from plant stock upon completion of planting.

3.06 SITE CLEAN UP

- A. Immediately clean up excess soil, mulch, or other debris and properly dispose of deleterious materials legally off-site in a manner consistent with local laws. Take necessary precautions to prevent contamination of clean areas as a result of cleaning operations.
- B. All paved areas shall be swept free of soil, stains and debris.
- C. Promptly remove equipment and unused materials at completion of activities in given area.
- D. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed. Restoration per Section 02940 Site Restoration.
- E. CONTRACTOR to protect existing or previously installed vegetation during all work activities. If impact occurs, CONTRACTOR to immediately repair effected vegetation and aerate soil over root zone of negatively impacted vegetation.

3.07 PROTECTION OF FINISHED WORK

- A. Mark seeded and planted areas to prevent intrusion by foot traffic and/or equipment.
- B. Immediately restore areas disturbed by continuing operations.
- C. CONTRACTOR to provide wrap or other protection against damage due to wildlife.

3.08 PLANTING INSTALLATION ACCEPTANCE

- A. Planting Installation Acceptance Inspections and Acceptance Issuance:
 - 1. Upon completion of the landscape work, the CONTRACTOR shall request an inspection by the ENGINEER to determine whether all landscape work conforms to the requirements of the Contract Documents.
 - 2. All landscape work must be protected and maintained until Planting Installation Acceptance is issued.
 - 3. There will be no partial inspections unless in the case of live stakes. If live stake installation precedes installation of other landscaping, inspection may be requested following live stake installation. If live stake installation follows installation of other landscaping, inspection may be requested before live stake planting.

- 4. If it is found that the landscape work does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the OWNER of all corrective work preventing Planting Installation Acceptance of the landscape work within five working days following the inspection. No partial approvals shall be given.
- 5. Upon completion of the corrective work, the CONTRACTOR shall request another inspection to determine whether all landscape work conforms to the requirements of the Contract Documents.
- 6. Corrective work followed by review will be required until the corrective work is found to be complete and acceptable by the OWNER.
- 7. The CONTRACTOR shall reimburse OWNER for expenses and fee required to have OWNER make additional field trips after the second inspection.
- 8. When the ENGINEER determines that the landscape work conforms to the requirements of the Contract Documents, the CONTRACTOR will receive a written notification of Planting Installation Acceptance within five working days following the Inspection.
- 9. The Maintenance Period will commence upon the date specified by the notification of Planting Installation Acceptance. Refer to Section 02931 for Landscape Maintenance.

END OF SECTION

LANDSCAPE MAINTENANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. All labor, materials, equipment necessary for maintenance for installed landscaping following planting installation acceptance. Maintenance activities include:
 - 1. Weed Control and Prevention
 - 2. Pest Control and Prevention
 - 3. Disease Control and Prevention
 - 4. Pruning of Plant Material
 - 5. Replacement of plants or areas not meeting the performance requirements.
 - 6. Watering Plant Material

1.02 RELATED WORK

- 1. Section 01025 Measurement and Payment
- 2. Section 01040 Coordination
- 3. Section 01700 Contract Closeout
- 4. Section 02930 Landscaping
- 5. Section 02932 Landscape Performance and Warranty

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- B. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material.
- C. Landscape Maintenance Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance of the installed plantings has been satisfied and for the duration of the required maintenance period.

1.05 SUBMITTALS

A. General: Meet requirements of Section 01300

- B. The CONTRACTOR shall submit the Maintenance Plan a minimum of 30 days of beginning the maintenance period.
- C. Requirements of Section 02930 apply to any replacement plantings installed during the maintenance period.

1.06 QUALITY ASSURANCE

A. Contractor Qualifications:

- 1. Maintenance Contractor: Minimum 5 years of experience in maintenance of native landscape projects.
- 2. Maintenance Supervisor: Minimum of 10 years of experience in landscape maintenance supervision, with experience or training in native seeding, landscaping, and management; pest control, soils; fertilizers; and plant identification.
- 3. Labor Force: Thoroughly familiar and trained in the work to be accomplished and perform the task in a competent, efficient manner acceptable to the OWNER.
- 4. Supervision: The foreman shall directly employ and supervise the work force at all times.
- 5. Notification of Change in Supervision: Notify OWNER of all changes in supervision.
- 6. Identification: Provide proper identification at all times for landscape maintenance firm's labor force.

B. Regulatory Requirements:

- 1. Perform all work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- 2. Adhere to all federal, state, and local regulations for all phases of the project regarding erosion and sediment control measures.
- 3. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.
- 4. All plant stock, original and replacement, shall comply with state and federal Laws and Regulations with respect to inspection for plant diseases and insect infestations. Quality and size shall conform to the current edition of *American Standard for Nursery Stock* (ANSI Z60.1) as published by AmericanHort, formed in 2014 with the consolidation of the American Nursery & Landscape Association and OFA—The Association of Horticultural Professionals.
- 5. Provide for all inspections and permits required by Federal, State, or local authorities in furnishing, transporting, and installing of all agricultural chemicals.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Requirements of Section 02930 apply to any replacement plantings installed during the maintenance period.
- B. Abide by Federal, State, or local authorities in furnishing, transporting, storage, handling and installing of all agricultural chemicals

1.08 SEQUENCING AND SCHEDULING

A. Installation per Section 02930.

B. Maintenance Period

- 1. Begins with written Planting Installation Acceptance by the OWNER/ENGINEER as defined in Section 02930.
- 2. Continues through number of growing seasons or months as specified in the Contract Documents. (Growing season is May 1-October 15.)
- 3. During the Maintenance Period the work force shall be present at the project site as often as necessary to perform specified maintenance in accordance with the accepted maintenance plan, but at a minimum once per month throughout the growing season.
- C. Warranty Period per Section 02932.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All replacement material:
 - 1. Match existing. See Section 02930 and written approvals for substitutions.
 - 2. For plant stock, match existing genus, species, and size. See Section 02930 and written approvals for substitutions.
 - 3. Meet requirements of these specifications and Section 02930.
- B. Herbicides, Insecticides, and Fungicides:
 - 1. Legal commercial quality materials with tracker dye with original manufacturers' containers, properly labeled with guaranteed analysis, as recommended by licensed applicators.
- C. Any herbicide or pesticide intended for use on site must be approved by the OWNER/ENGINEER prior to use.
- D. Herbicides shall have Glyphosate as the primary active ingredient, unless otherwise approved by the OWNER/ENGINEER. Herbicides shall be approved for aquatic use where applicable.
- E. The use of pesticides is not recommended and will only be approved under extreme circumstances. Under no circumstances will pesticide application be allowed where the risk of surface water contamination exists unless the pesticide is approved for aquatic use and the Contractor has obtained the necessary permits to apply the approved herbicide in an aquatic environment.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

A. Maintenance Plan:

- 1. The Maintenance Plan shall detail the CONTRACTOR's technical approach to completing the maintenance period work required by the contract documents while providing the best value to the OWNER.
- 2. The CONTRACTOR shall submit the Maintenance Plan within 30 days following issuance of written acceptance by OWNER or earlier. No adjustments for time or money will be made if resubmittals of the Maintenance Plan are required due to deficiencies in the plan.
- 3. The Maintenance Plan shall coordinate different work items and address the technical requirements listed in the specifications, drawings, and permits to ensure undesired plant species are not establishing in the work area and the desired species are maintained and replaced. The Maintenance Plan shall include, but is not limited to, the following:
 - a. Means and methods for watering, weeding, pest control, inspection, reporting and replacement of plantings.
 - b. Site inspection forms.
 - c. Vegetation maintenance log (e.g. hours and work performed each visit).
 - d. Herbicide/Pesticide application forms.
 - e. Inspector license qualifications and experience.

B. Maintenance Period

- 1. Begins with written Planting Installation Acceptance by the OWNER/ENGINEER, as defined in Section 02930.
- 2. Continues through two full growing seasons. (Growing season is May 1-October 15) or receipt of Landscape Maintenance Acceptance.
- 3. During the Maintenance Period the work force shall be present at the project site as often as necessary to perform specified maintenance in accordance with the accepted maintenance plan but at a minimum once per month throughout the growing season.

C. Protection of Existing Conditions:

- 1. General: Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities plant materials on or adjacent to the site of the work.
- 2. Barriers: Provide barricades, fences or other barriers as necessary to protect existing conditions from damage during maintenance operations.
- 3. Hazardous Operations: Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing trees.
- 4. Notification: Give written notification of all damaged plants and structures.
- 5. Replacement of plant material:
 - a. Replace existing plants which are damaged during maintenance period with plants of the same species and size as those damaged at no cost to the OWNER.

- b. Replace existing or replaced plants which are not thriving during maintenance period with plants of the same species and size at no cost to the OWNER.
- c. Plants considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

3.02 TREE AND PLANT MAINTENANCE

Maintenance during the maintenance period shall include but not be limited to:

- A. Notify OWNER/ENGINEER prior to and following any maintenance activity.
- B. Maintenance activities should occur at a minimum of once per month, or more if required during the growing season.
- C. Final Acceptance of work of this Section will be subject to acceptance by OWNER/ENGINEER at end of the maintenance period.
- D. Inspect all plant materials regularly for signs of stress and damage.

E. Watering:

- 1. Watering of all plant material. For optimum plant growth, plant material shall be kept moist (1" total water per week, including rainfall) until seeded vegetation is 4" high.
- 2. Maintain watering basins around all trees so that enough water can be applied to establish moisture through major root zones.
- 3. Adjust frequency and length of time for watering cycles according to changing soil and weather conditions.
- 4. Maintain originally specified depth of mulch to reduce evaporation and frequency of watering.

F. Rills, Gullies, and Sheet Erosion

- 1. Rills, gullies, and sheet erosion caused by eroded soil will be repaired. Woody plants and/or seeded areas impacted will be repaired and replanted as needed. Damaged or ineffective erosion control blankets or mulch shall also be replaced at the time of reseeding and/or replanting of the eroded area.
- G. Settled or Leaning Plants: Reset plants to proper grades or upright position.

H. Weed Control:

1. Weeding and control of undesirable plants by approved methods. Weed whip annual weed species prior to seed set. Spot spraying or hand wicking of an herbicide application may be required to deter aggressive, persistent, biennial or perennial nonnative species. Avoid herbicide contact with native plant material.

- 2. Use only legally accepted herbicides to control weed growth. Aquatic areas require herbicides approved for aquatic use. Appropriate Michigan Environment, Great Lakes and Energy (EGLE), formally MDEQ, Aquatic Nuisance Control Permits are necessary.
- 3. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.
- 4. Undesirable plants include, but are not limited to:

Scientific Name	Common Name
Agrostis gigantea	redtop
Ailanthus altissima	tree-of-heaven
Alliaria petiolata	garlic mustard
Ambrosia artemisiifolia	common ragweed
Ambrosia trifida	giant ragweed
Arctium minus	common burdock
Barbarea vulgaris	yellow rocket
Berberis thunbergii	japanese barberry
Berteroa incana	hoary alyssum
Bolboschoenus maritimus	bulrush
Brassica nigra	black mustard
Celastrus orbiculatus	oriental bittersweet
Centaurea stoebe	spotted knapweed
Chenopodium album	lambs-quarters
Cirsium arvense	canada thistle
Cirsium vulgare	bull thistle
Convallaria majalis	lily-of-the-valley
Convolvulus arvensis	field bindweed
Cynodon dactylon	bermuda grass
Cyperus esculentus	yellow nutsedge
Daucus carota	queen-annes-lace
Digitaria ischaemum	smooth crab grass
Digitaria sanguinalis	hairy crab grass
Dipsacus fullonum	wild teasel
Dipsacus laciniatus	cut-leaf teasel
Elaeagnus umbellata	autumn-olive
Elymus repens	quack grass
Fallopia convolvulus	false buckwheat
Fallopia japonica	japanese knotweed
Frangula alnus	glossy buckthorn
Hesperis matronalis	dames rocket
Ipomoea purpurea	common morning-glory
Ligustrum vulgare	common privet
Lonicera maackii	amur honeysuckle

Scientific Name	Common Name
Lonicera tatarica	tartarian honeysuckle
Lysimachia nummularia	moneywort
Lythrum salicaria	purple loosestrife
Melilotus albus	white sweet-clover
Melilotus officinalis	yellow sweet-clover
Morus alba	white mulberry
Pastinaca sativa	wild parsnip
Phragmites australis	reed
Scientific Name	Common Name
Rhamnus cathartica	common buckthorn
Robinia pseudoacacia	black locust
Rosa multiflora	multiflora rose
Rumex crispus	curly dock
Scilla luciliae	glory-of-the-snow
Sinapis arvensis	wild mustard
Sonchus arvensis	perennial sow-thistle
Sorghum halepense	johnson grass
Stellaria media	common chickweed
Tanacetum vulgare	garden tansy
Taraxacum officinale	common dandelion
Vincetoxicum nigrum	black swallow-wort

- I. Mulching: Re-mulch at the beginning of each growing season according to Section 02930. At the end of the guarantee, all mulch shall be at required depths and widths around trees.
- J. Treat as required to prevent and control insects, pests and diseases.
- K. Pest Control: Apply sprays and treatments as necessary for scale insects, leaf eating insects and blight control. Apply according to manufacturer's current printed instructions and in accordance with local ordinances.
- L. Control geese and other wildlife by restricting access to the plants and seeded areas or removing them from the planting areas.
- M. Predation from animals shall not relieve CONTRACTOR from replacing the plant material. CONTRACTOR shall replant at the proper season and provide protection to the plant material from wildlife damage as necessary.
- N. Pruning: Prune, thin, and shape trees only as directed by the ENGINEER/OWNER.

3.03 MAINTENANCE PERIOD PERFORMANCE

A. All landscaping that does not comply with performance criteria to be replaced.

B. Execution and timing of replacement plantings shall comply with Section 02930.

C. Trees

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all trees not in a thriving condition.
- Trees considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

D. Shrubs

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all shrubs not in a thriving condition.
- 2. Shrubs considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Shrubs exhibiting only basal sprouts will not be accepted.

E. Live Stakes

- Replace, without cost to OWNER, and as soon as weather conditions permit, all live stakes with poor survivability at the end of each growing season and at the end of the maintenance period.
- 2. Successful planted areas must exhibit 60% survivability.

F. Plugs

- 1. Replant, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER all dead plugs if survivability is lower than the following:
 - a. There is less than 90% survivability at the end of the first growing season, or
 - b. There is less than 80% survivability at the end of the second growing season.

G. Native Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, areas with poor vegetative cover anytime within the maintenance period growing seasons. Poor vegetative cover shall defined as follows:
 - a. There is less than 90% coverage (including cover crop). Re-seed or over-seed the entire seeding area where coverage is less than 90% until 90% coverage is achieved.
 - b. There are bare spots greater than four (4) square feet in area. Re-seed and remulch bare spots.

- c. There is less than 10% of the native species observed to be established at the end of the first growing season. Re-seed or over-seed are where measure is not met.
- d. There is less than 75% of the native species observed to be established at the end of the second growing season. Re-seed or over-seed are where measure is not met.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.

H. Turf Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the maintenance period, or as permitted in writing by the ENGINEER, and at the end of the maintenance period all bare areas and areas with poor vegetative cover or:
 - a. There is less than 90% coverage.
 - b. There are bare spots greater than four (4) square feet in area.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.
- 3. No more than 10% percent relative ground coverage is permitted by any of the listed undesirable species at the end of each growing season and at the end of the maintenance period.
- I. Exemptions: CONTRACTOR shall not be responsible for plant material that has been damaged by acts of vandalism or fire or severe wind or hail after the Planting Installation Acceptance.
- J. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.

3.04 SITE CLEAN UP

A. Site clean up in accordance with Section 02930.

3.05 PROTECTION OF FINISHED WORK

A. Protection of finished work in accordance with Section 02930.

3.06 FIELD QUALITY CONTROL

A. Maintenance Monitoring

1. CONTRACTOR is to perform monitoring once per month during the growing season, at a minimum, to monitor the condition of the vegetation and its performance relative to performance criteria. This can be conducted during the maintenance visits.

- 1. A comprehensive report shall be submitted to the OWNER within 10 working days following each of the maintenance visits during the growing season. The report shall document all actions conducted by the Contractor during the maintenance visit. The report shall include:
 - a. Map detailing location of maintenance performed. Please note areas within the planting zones of special concern (e.g. dense patch of non-native/invasive species).
 - b. Summary of inspection field notes, inspection forms, maintenance logs, and herbicide/pesticide application and EGLE Aquatic Treatment Forms. Documentation of summarized material shall be included in an appendix.
 - c. Summary of weed and pest control measures and schedule of operations.
 - d. Summary of maintenance correspondence.
 - e. Detailed discussion of work completed during maintenance visits, including any replacements.
 - f. Detailed discussion of work required for the next maintenance inspection visitseof maintenance.
 - g. Provide representative photographs at fixed photo points of areas vegetated by the CONTRACTOR.
- 2. Verification: Verification of visits may be required by the OWNER in the form of labor reports and/or certified payroll covering the visits.

3.07 LANDSCAPE MAINTENANCE ACCEPTANCE

- A. Landscape Maintenance Acceptance Inspections and Acceptance Issuance:
 - 1. At the end of the maintenance period, the CONTRACTOR shall request a review by the ENGINEER to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 2. If it is found that all landscape and maintenance work does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the ENGINEER of all corrective work preventing acceptance of the landscape and maintenance work within five working days of the Review. No partial approvals shall be given.
 - 3. Upon completion of the corrective work, the CONTRACTOR shall request another Review to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 4. Corrective work followed by review will be required until the corrective work is found to be complete by the ENGINEER.
 - 5. The CONTRACTOR shall reimburse ENGINEER for expenses and fees required to have ENGINEER make additional field trips after the first inspection.
 - 6. When the ENGINEER determines that the landscape and maintenance work conforms to the requirements of the Contract Documents at the end of the maintenance period the CONTRACTOR will receive a written notification of Landscape Maintenance Acceptance.
 - 7. Issuance of the Landscape Maintenance Acceptance notification will terminate the maintenance period and initiate the Warranty Period, Section 02932.

- 8. Continue maintenance of all landscape work until the date that the OWNER accepts maintenance at the end of the Maintenance Period.
- 9. The OWNER will accept maintenance responsibility upon the date specified in the notification of Final Landscape Maintenance Acceptance.

LANDSCAPE WARRANTY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for satisfactory landscape warranties associated with installed landscaping following landscape maintenance acceptance.

1.02 RELATED WORK

- 1. Section 01025 Measurement and Payment
- 2. Section 01040 Coordination
- 3. Section 01700 Contract Closeout
- 4. Section 02930 Landscaping
- 5. Section 02931 Landscape Maintenance

1.03 REFERENCES

- A. ANSI American National Standards Institute:
 - 1. American Standard for Nursery Stock, ANSI Z60.12014

1.04 DEFINITIONS

- A. Acceptance: Wherever the terms "acceptance" or "accepted" are used herein, they mean acceptance of OWNER/ENGINEER in writing.
- B. Planting Installation Acceptance: This refers to the written acceptance by the OWNER/ENGINEER of the installed plant material as defined in Section 02930.
- C. Landscape Maintenance Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance of the installed plantings has been satisfied and for the duration of the required maintenance period as defined in Section 02931.
- D. Final Acceptance: This refers to the written acceptance by the OWNER/ENGINEER that the maintenance and performance of the installed plantings has been satisfied and for the duration of the warranty period.

1.05 SUBMITTALS

- A. General: Meet requirements of Section 01300
- B. Requirements of Section 02930 apply to any replacement plantings installed during the warranty period.

1.06 QUALITY ASSURANCE

- A. Contractor Qualifications:
 - 1. Refer to Sections 02930 and 02931.
- B. Regulatory Requirements:
 - 1. Refer to Sections 02930 and 02931.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Refer to Sections 02930 and 02931.
- 1.08 SEQUENCING AND SCHEDULING
 - A. Installation per Section 02930.
 - B. Maintenance Period per Section 02931.
 - C. Warranty Period
 - 1. Begins with written Landscape Maintenance Acceptance.
 - 2. Continues through one full growing season following Landscape Maintenance Acceptance. (Growing season is May 1 through October 15.) or receipt of Final Acceptance.
 - 3. During the Warranty Period, the CONTRACTOR shall guarantee all landscaping and respond within 10 working days of written requests by the OWNER for replacement or repair. If the CONTRACTOR fails to respond within this time, the OWNER may proceed with replacement work and bill the CONTRACTOR.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All replacement material:
 - 1. Match existing. See Section 02930 and written approvals for substitutions.
 - 2. For plant stock, match existing genus, species, and size. See Section 02930 and written approvals for substitutions.
 - 3. Meet requirements of these specifications and Sections 02930 and 02931.
- B. Herbicides, Insecticides, and Fungicides:

1. Refer to Section 02930 and 02931.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

A. Warranty Period

- 1. Begins with written Landscape Maintenance Acceptance as defined in Section 02930.
- 2. Continues through one full growing season following Landscape Maintenance Acceptance. (Growing season is May 1 through October 15.) or receipt of Final Acceptance.
- 3. During the Warranty Period, the CONTRACTOR shall guarantee all landscaping and respond within 10 working days of written requests by the OWNER for replacement or repair. If the CONTRACTOR fails to respond within this time, the OWNER may proceed with replacement work and bill the CONTRACTOR.
- B. Protection of Existing Conditions: Refer to Section 02931.

3.02 WARRANTY PERIOD PERFORMANCE

- A. All landscaping that does not comply with performance criteria to be replaced.
- B. Execution and timing of replacement plantings shall comply with Section 02930.

C. Trees

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all trees not in a thriving condition.
- 2. Trees considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Trees exhibiting only basal sprouts will not be accepted.

D. Shrubs

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all shrubs not in a thriving condition.
- 2. Shrubs considered to be thriving have a minimum of 75 percent of the plant showing sprouting and/or leaf production. Shrubs exhibiting only basal sprouts will not be accepted.
- E. Live Stakes

- 1. Replace, without cost to OWNER, and as soon as weather conditions permit, all live stakes with poor survivability at the end of the warranty period.
- 2. Successful planted areas must exhibit 60% survivability.

F. Plugs

1. Replant, without cost to OWNER, and as soon as weather conditions at the end of the warranty period, or as permitted in writing by the ENGINEER all dead plugs if survivability is lower than 80% survivability at the end of the warranty period.

G. Native Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all bare areas and areas with poor vegetative cover or:
 - i. There is less than 90% coverage (including cover crop)
 - ii. There are bare spots greater than four (4) square feet in area.
 - iii. There is less than 50% of the native species observed to be established at the end of the second growing season.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.

H. Turf Seed

- 1. Reseed, without cost to OWNER, and as soon as weather conditions permit during the warranty period, or as permitted in writing by the ENGINEER, and at the end of the warranty period all bare areas and areas with poor vegetative cover or:
 - i. There is less than 90% coverage (including cover crop)
 - ii. There are bare spots greater than four (4) square feet in area.
- 2. Coverage will be determined by using a 1-meter quadrant placed randomly across the entirety of each planting zone.
- I. Exemptions: CONTRACTOR shall not be responsible for plant material that has been damaged by acts of vandalism or fire after the Planting Installation Acceptance.
- J. At any point during the maintenance period no more than 10% percent relative ground coverage is permitted by any of the listed undesirable species.

3.03 SITE CLEAN UP

A. Site clean up in accordance with Section 02930.

3.04 PROTECTION OF FINISHED WORK

A. Protection of finished work in accordance with Section 02930.

3.05 FINAL ACCEPTANCE

- A. Final Acceptance after Warranty Period
 - 1. At the end of the warranty period, the CONTRACTOR shall request a review by the ENGINEER to determine whether all landscape and maintenance work conforms to the requirements of the Contract Documents.
 - 2. If it is found that all landscaping does not conform to the requirements of the Contract Documents, the CONTRACTOR will receive written notification from the ENGINEER of all corrective work preventing acceptance of the landscaping within five working days of the Review. No partial approvals shall be given.
 - 3. Upon completion of the corrective work, the CONTRACTOR shall request another Review to determine whether all landscaping conforms to the requirements of the Contract Documents.
 - 4. Corrective work followed by review will be required until the corrective work is found to be complete by the ENGINEER.
 - 5. The CONTRACTOR shall reimburse ENGINEER for expenses and fee required to have ENGINEER make additional field trips after the first inspection.
 - 6. When the ENGINEER determines that the landscaping conforms to the requirements of the Contract Documents at the end of the Warranty Period the CONTRACTOR will receive a written notification of Final Acceptance.
 - 7. Issuance of the Final Acceptance notification will terminate the warranty period.

SITE RESTORATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and maintenance necessary to provide finished site restoration.

1.02 REFERENCES

A. Related Work

- 1. Section 02220 Soil Erosion and Sedimentation Control
- 2. Section 02300 Earthwork
- 3. Section 02930 Landscaping

1.03 SUBMITTALS

A. Procedures for any restoration work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. All materials for restoration shall be in accordance with respective specification section included here within.

PART 3 – EXECUTION

3.01. GENERAL

- A. Execution for restoration shall be in accordance with respective specification section included here within.
- B. All paved areas shall swept free of soil, stains and debris.
- C. All disturbed vegetation, pavement, curb and gutter, structure, or any other pre-existing condition shall be restored to original condition at expense of the Contractor.
- D. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed.
- E. Mark restored areas to prevent intrusion by foot traffic and/or equipment as necessary.
- F. Immediately restore areas disturbed by continuing operations.

INVASIVE SPECIES CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. All equipment, labor, herbicide, material haul and disposal, and transportation to complete the control of invasive species as shown in the contract plans.
- B. Work includes acquiring Aquatic Nuissance Control Permit or any other permits required to conduct the work.
- C. Work includes follow up treatments within the maintenance period.

1.02 RELATED WORK

- A. Section 02220 Soil Erosion Control
- B. Section 02300 Earthwork
- C. Section 02622 Erosion Control Blankets
- D. Section 02930 Landscaping
- E. Section 02931 Landscape Maintenance
- F. Section 02932 Landscape Performance and Warranty

1.04 DEFINITIONS

- A. Maintenance Period shall be for two years following the initial treatment.
- B. Growing Season shall be considered to be May 1 through October 1.

1.04 SUBMITTALS

- A. Invasive Species Control Work Plan- CONTRACTOR to submit a technical plan for accomplishing the invasive species control as presented in the Contract Documents to the ENGINEER for approval prior to start of work. Work plan to include:
 - 1. All relevant permits, licenses, and authorizations required to complete the work;
 - 2. Written detail for treatments and schedule;
 - 3. Chemicals, formulation, brand names of chemicals, concentration, and techniques to be used;
 - 4. Plan and schedule for follow up spraying and retreatments of stumps during maintenance period;
 - 5. Copies of Pesticide applicator licenses categories 5 and 6.
- B. Treatment Reports- CONTRACTOR to submit treatment reports within 14 days following each treatment visit to ENGINEER for approval prior to start of work. Report to include:
 - 1. Date of visit;
 - 2. Locations work was performed;
 - 3. Weather conditions at time of treatment;
 - 4. Work performed and progress made;
 - 5. Specific herbicides used (generic and brand name, concentrations, application methods,

- and quantity of herbicide and surfactant used by date);
- 6. Surveys of treated areas;
- 7. Comments on anticipated effectiveness of the treatments

1.05 QUALITY ASSURANCE

A. Contractor Qualifications

- 1. All work shall be performed by a contractor experienced in invasive species removal and treatment, with minimum of 3 years of experience. Personnel used to perform work shall have occupational experience in projects similar to the scope and size of this project and licensed in both category 5 and 6.
- 2. CONTRACTOR to submit to provide proof of prior experience, including 3 references for similar type projects with dates, locations, client, size of project.

B. Regulatory Requirements

- 1. The CONTRACTOR is responsible for obtaining Aquatic Nuisance Permit or any other permits required to conduct the invasive species control work.
- 2. Perform all work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- 3. Adhere to all federal, state, and local regulations for all phases of the project regarding erosion and sediment control measures.
- 4. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.

C. Reporting

1. CONTRACTOR to notify the ENGINEER within 48 hours of completing the foliar spraying work and cut stump work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage and handling shall comply with governing regulations and common accepted practices.

PART 2 – PRODUCTS

2.01 HERBICIDES AND PESTICIDES

- A. Any herbicide or pesticide intended for use on site must be approved by the OWNER/ENGINEER prior to use. Herbicides and surfactants shall be approved for aquatic use where applicable.
- B. All application of herbicide should include dye for tracking purposes.

PART 3 – EXECUTION

3.01 SEQUENCING AND SCHEDULING

- A. Submit an Invasive Species Control Work Plan for approval prior to mobilization to Site for landscaping.
- B. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials on or adjacent to the site of the work.
- C. CONTRACTOR to post signs wherever chemical treatment occurs within 50 feet of a trail, parking lot, or other developed area or anywhere else where there is a reasonable expectation of public exposure to the herbicide. Signage shall remain in place for the minimum length of time as determined by the herbicide label. The CONTRACTOR is responsible for removing all signage. Contractor to follow all state regulations and product labeling requirements for signage.
- D. CONTRACTOR is responsible for re-treatment if rain occurs within six hours of the original treatment.
- E. Treatment shall be conducted according to the following time frames:
 - 1. Foliar spray treatments must occur after plant leaves are fully developed in spring and prior to September 1.
 - 2. Seeding spraying must be done between June 1 and September 1 and should be repeated for the following two growing seasons following the initial cut stump treatment.
 - 3. Phragmites treatment shall follow the schedule as dictated by the permit but should generally be conducted from the onset of flowering (tasseling) in early to mid-August until frost.
 - 4. Phragmites touch up treatment should be scheduled for 3-4 weeks later to retreat any plants that were missed.
 - 5. Phragmites should be treated for re-sprouts during the following year, within the same timeframe as specified above.

F. Environmental Requirements

- 1. All applications should be done by a MDARD certified pesticide applicator.
- 2. Overspray onto non-target vegetation and/or soil and runoff of the herbicide into the ground or water must not occur.
- 3. All equipment, footwear, clothing and all other materials brought on site for this project must be complete clean and free of all plant material and soil (seeds, pieces of vegetation, chunks of soil, etc.) prior to arrival at the park. These precautions are critical to preventing the spread of invasive plants and contamination of genetic material (seeds) from locations outside of the park.

- 4. All footwear, clothing, and equipment must be checked and cleaned of seeds, other plant fragments, and soil again before moving between sites to prevent the spread of invasive plants from one site to another and into un-infested areas.
- G. The contractor is responsible for supplying all equipment needed to complete the job, including cutting equipment, herbicide, sprayers, safety equipment, signs, and transportation. All work must be performed by hand (handheld power tools such as chainsaws and clearing saws are permitted).

3.04 PHRAGMITES

- A. Perform treatment within time guidelines specified.
- B. Treat in areas as shown on the Drawings.
- C. The chemical, concentration, and technique shall be as needed for treatment and per permit and plan accepted by the ENGINEER prior to work.
- D. Spraying and retreatment during the maintenance period.
- E. The CONTRACTOR shall verify all plants or areas to receive treatment with ENGINEER prior to work
- F. The CONTRACTOR to protect all vegetation and work to remain during invasive species treatment activities.

3.05 SITE CLEAN UP

- A. Immediately clean up excess debris and properly dispose of materials legally off-site in a manner consistent with local laws. Take necessary precautions to prevent contamination of clean areas as a result of cleaning operations.
- B. Promptly remove equipment and unused materials at completion of activities in given area.
- C. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed.
- D. Immediately repair damaged vegetation.

3.06 PROTECTION OF FINISHED WORK

- A. Mark treated areas to protect, as required.
- B. Immediately restore areas disturbed by continuing operations.

HABITAT STRUCTURES

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish all labor, materials, equipment necessary to provide habitat structures, including (but not limited to):
 - At-grade riffles;
 - Whole Tree Revetment;
 - Scour Pool Log;
 - Woody Habitat
 - Staggered Wing Logs;
 - Horizontal Log Sill; and
 - Rootwad Revetment.

1.02 RELATED WORK

- A. Section 01025, Measurement and Payment.
- B. Section 02110, Clearing and Grubbing.
- C. Section 02207, Aggregate Material
- D. Section 02216, Topsoil
- E. Section 02271, Rip Rap
- F. Section 02300, Earthwork
- G. Section 02622, Erosion Control Blankets

PART 2 PRODUCTS

2.01 GENERAL

- A. Woody material for habitat structure construction shall be obtained from approved locations and approved by the ENGINEER. Habitat structure materials shall not be cut for the sole purpose of providing the raw materials, unless explicitly approved by the ENGINEER and the Owner.
- B. Some materials within the project boundaries may be considered for use if designated for removal or clearing and approved by the ENGINEER for habitat structure construction.

2.02 AT-GRADE RIFFLES

A. The at-grade riffle at Station 15+40 is to be constructed with 8-16" Natural Glacial Stone.

B. The at-grade riffle at Station 17+50 is to be constructed with 4-8" Natural Glacial Cobble.

2.03 WHOLE TREE REVETMENT

- A. Whole tree revetment to be constructed of whole trees with root wads removed but limb intact, with a breast height diameter of 6" to 10". Trees should be obtained from live standing timber and be free of rot.
- B. Model 138-DBI Duckbill Earth Anchor, or equivalent, with 5/16" galvanized wire rope lead and loop with 2-5/16" galvanized metal wire rope clamps to secure trees.

2.04 SCOUR POOL LOG

A. Scour pool log shall be 16" diameter (min), 25' minimum length. Backfill as needed with sand and gravel mix and compact. Log shall be secured with one 6" diameter, 6' long log/post set vertically and one 6" diameter, 6' long log set horizontally. Material should be obtained from live standing timber and be free of rot.

2.05 WOODY HABITAT

A. Habitat log bundle to be constructed of 4-8" diameter tree top or 12"-18" diameter log, 8-12' long, secured with log/ posts. Log/posts to be 6" diameter and 6' long. Material should be obtained from live standing timber and be free of rot.

2.06 STAGGERED WING LOGS

A. Staggered wing logs shall be 12-16" diameter (minimum), 24' long (minimum) and embedded into the banks a minimum of 16'. Material should be obtained from live standing timber and be free of rot.

2.07 HORIZONTAL LOG SILL

A. Horizontal log sill shall be 23-26" diameter (minimum), 24' long (minimum). Length of log to be embedded 50% into streambed. Material should be obtained from live standing timber and be free of rot.

2.08 ROOTWAD REVETMENT

- A. Root wad truck to be 12-18" diameter, 24' long from face of rootwad. A footer log shall be used which shall be 12-18" diameter, 8' long and buried into the streambed. Root wads shall be installed as three along the streambanks at the locations shown on the plans.
- B. Boulders for stabilization to be 24-36" in diameter.

PART 3 EXECUTION

3.01 GENERAL

- A. Habitat structures shall be provided in the quantities shown on the plans. Habitat structures shall be located as shown on the plans or as directed by the ENGINEER.
- B. The Contractor shall replace and/or repair any and all damage to existing site features resulting from structure construction operations at no additional cost to the contract.

3.02 AT-GRADE RIFFLES

- A. All at-grade riffles to be installed per Drawing details and as directed by ENGINEER.
- B. Riffle rock material to be placed a minimum of 24" thick, and at 48" thick at the riffle header. Riffle header to be installed at 3' wide and extend 5' into banks, extending 2' below the bottom of the rest of the riffle.

3.03 WHOLE TREE REVETMENT

- A. All whole tree revetment to be installed per Drawing details and as directed by ENGINEER.
- B. Whole trees to be installed at the toe of the bank, flush with the streambed and streambank. Trees to be installed in two layers and shingled, with branches faced downstream. Crowns lie over and fully overlap the trunks of the downstream tree.
- C. Each tree to receive two anchors.

3.04 SCOUR POOL LOG

A. All scour pool logs to be installed per Drawing details and as directed by ENGINEER. The log shall be embedded 50% within the streambank. Backfill as needed with sand and gravel mix and compact. Log shall be secured with one 6" diameter, 6' long log/post set vertically and one 6" diameter, 6' long log set horizontally and buried a minimum of 4' into the bank. Logs to be bolted to one another.

3.05 WOODY HABITAT

A. Woody Habitat to be installed per Drawing details and as directed by ENGINEER. Habitat log bundle to be secured with log/ posts. Log/posts to be 6" diameter and 6" long, embedded 4". Bolt logs to woody habitat log to provide stability/ anchoring.

3.06 STAGGERED WING LOGS

A. All staggered wing logs to be installed per Drawing details and as directed by ENGINEER. Staggered wing logs shall be embedded into the banks a minimum of 16'. Logs to be installed flush on the streambed at +/- 5% to horizontal.

3.07 HORIZONTAL LOG SILL

A. All mid-channel scour pool horizontal log sills to be installed per Drawing details and as directed by ENGINEER. Horizontal log sill shall be embedded 4' (minimum) on both sides of the streambank. Length of log to be embedded 50% into streambed.

3.08 ROOTWAD REVETMENT

- A. All rootwad revetments to be installed per Drawing details and as directed by ENGINEER.
- B. A footer log shall be used and buried into the streambed. Root wads shall be installed as three along the streambanks at the locations shown on the plans. Boulders to be used around the rootwads for stabilization.