

CITY OF DE PERE

PROJECT

21-09

MATTHEW DRIVE POND RECONSTRUCTION

**BID DATE:
JANUARY 13, 2022
@ 1:00 PM**

Bid documents, including plans and specifications, are available for download at www.QuestCDN.com. The QuestCDN website can also be accessed through the City website at www.deperewi.gov/projects or by pressing the *Projects* icon at the bottom of any City website page. Download cost is \$15 for each contract. Bidders will be charged an additional fee of \$30 to submit a bid electronically. Bidding documents may be viewed on the QuestCDN website or at the Municipal Service Center, 925 S. Sixth Street, De Pere, WI 54115.

Bid Tabs must be verified by staff prior to posting and will be available for viewing on the website within 7 days following the bid opening. Award information will be pending until approved by the Common Council.

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DECEMBER 17, 2021 – DECEMBER 24, 2021

CITY OF DE PERE

ADVERTISEMENT TO BID

PROJECT 21-09

MATTHEW DRIVE POND RECONSTRUCTION

Online bids will be received and accepted for Project 21-09 Matthew Drive Pond Reconstruction via the online electronic bidding service through QuestCDN.com, until 1:00 PM, Thursday, January 13, 2022, at which time they will be publicly accepted, displayed and read aloud.

Project 21-09 for which proposals are being sought includes the following approximate quantities:

- 400 LF New Storm Sewer (12" - 42") and Associated Appurtenances.
- 21000 CY of Unclassified Excavation.
- 190 SY Medium Rip Rap.
- 19,300 SY Landscape Restoration
- 2,500 LF Silt Fence Installation

Complete digital project bidding documents are available for viewing and/or downloading at www.QuestCDN.com or may be examined at the office of the Director of Public Works. Digital plan documents may be downloaded for \$15 by inputting Quest project #6645987 on Quest's Project Search page. Project documents must be downloaded from QuestCDN which will add your company to the Planholder List and allow access to vBid online bidding for the submittal of your bid. Bidders will be charged an additional fee of \$30 to submit a bid electronically. The QuestCDN website can also be accessed through the City website at www.deperewi.gov/projects or by pressing the *Projects* icon at the bottom of any City website page. Contact QuestCDN Customer Support at 952-233-1632 or info@questcdn.com for assistance in membership registration, downloading digital project information and vBid online bid submittal questions.

Each proposal shall be accompanied by a bid bond in an amount equal to five percent (5%) of the bid, payable to the City of De Pere, as a guarantee that if the bid is accepted, the bidder will execute a contract and furnish a contract bond as set forth in the General Conditions of the City of De Pere. In case the bidder fails to file such contract and bond, the amount of the bid bond shall be forfeited to the City of De Pere as liquidated damages.

The letting of the contract is subject to the provisions of the following Wisconsin Statutes:

Section 62.15 regarding Public Works.

Section 66.0901(3) regarding Prequalification of Contractor.

Each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works no later than 4:00 PM, Monday, January 10, 2022. Prospective bidders who have previously submitted such forms subsequent to January 1, 2021 will not be required to separately submit such form for this project.

The City of De Pere reserves the right to reject any or all bids, to waive any informalities in bidding and to accept any proposal which the Common Council deems most favorable to the interest of the City of De Pere.

Dated this 17th day of December 2021.

Board of Public Works
City of De Pere
Eric Rakers, P.E.
City Engineer

Project 21-09

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

- 1.1 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- None

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.1 Complete sets of the Bidding documents in the number and for the deposit sum, if any, stated in the Advertisement to Bid may be obtained as stated in the Advertisement for bids.
- 2.2 Complete sets of Bidding Documents shall be used in preparing Bids; Owner does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3 Owner, in providing the Bidding Documents on the terms stated in the Advertisement for Bids, does so only for the purpose of obtaining Bids for the Work and does not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.1 In accordance with Section 66.0901(3), each bidder shall pre-qualify by submitting proof of responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works as stated in the Advertisement for Bids. Prospective bidders who have previously submitted such forms after January 1st of this year will not be required to separately submit such form for this project.

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

- 4.1 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in the General Conditions.
- 4.2 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, including Owner, or others.

4.3 Subsurface and Physical Conditions

- A. The technical data includes:
 - 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).
 - 3. In preparation of the Plans and Specifications, Engineer relied upon the following reports of explorations and tests of subsurface conditions at the Site:
 - a. Geotechnical Engineering Report, De Pere Project 20-01, by ECS Midwest, LLC
- 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. Contractor may not rely upon or make any claim against Owner, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor’s purposes, including but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. Any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.4 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. 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.

4.5 Reference is made to Section 01 10 00: Summary of Work, for work that will be completed and for the 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) 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 portions thereof related to price) for such other work.

4.6 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. Visit the Site and 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. Obtain and carefully study (or accept consequences of not doing so) all 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;
 - E. 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;
 - F. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
 - G. 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;
 - H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies, that bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
 - I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 4.7 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 – SITE AND OTHER AREAS

- 5.1 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided 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 6 – INTERPRETATIONS AND ADDENDA

- 6.1 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda 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.
- 6.2 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner and Engineer.

ARTICLE 7 – BID SECURITY

- 7.1 A Bid shall be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price and in the form of a certified check or bank money order or Bid bond (on the form attached) issued by a surety meeting the requirements of the General Conditions. Submittal of a Bid Bond on a form other than the Bid Bond form included in the Bidding Documents may be cause for rejection of Bid. The fully executed bid bond must be uploaded into QuestCDN. If the bidder elects to furnish bid security other than a bid bond, the bid security must be submitted in a sealed envelope enclosed in a separate package plainly marked on the outside with the notation "BID SECURITY" along with the project number and name and addressed to the Board of Public Works of the City of De Pere, Municipal Service Center, 925 S. Sixth Street, De Pere, WI 54115 **prior to the deadline for submission of bids.**
- 7.2 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 fifteen (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 per the General Conditions.
- 7.3 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 8 – CONTRACT TIMES

- 8.1 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Bid Form and Summary of Work.

ARTICLE 9 – LIQUIDATED DAMAGES

- 9.1 Provisions for liquidated damages are set forth in the General Conditions.

ARTICLE 10 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 10.1 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Bid Form and Summary of Work.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.1 The Bidder shall submit with the Bid 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, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.2 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposed 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 makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner subject to revocation of such acceptance after the Effective Date of the Agreement.
- 11.3 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 12 – PREPARATION OF BID

- 12.1 The Bid form is included with the Bidding documents.
- 12.2 All blanks on the Bid Form shall be completed by printing in ink or by typewrite 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 alternative, and unit price item listed therein, or the words “No Bid,” “No Change,” or “Not Applicable” entered.
- 12.3 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 incorporations shall be shown below the seal.
- 12.4 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.
- 12.5 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.
- 12.6 A Bid by an individual shall show the Bidder’s name and official address.
- 12.7 A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.
- 12.8 All names shall be typed or printed in ink below the signatures.
- 12.9 The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 12.10 The address and telephone number for communications regarding the Bid shall be shown.
- 12.11 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 13 – BASIS OF BID; COMPARISON OF BIDS

13.1 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 accord with 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.

ARTICLE 14 – SUBMITTAL OF BID

- 14.1 A Bid shall be submitted no later than date and time prescribed and at place indicated in Advertisement for Bids and shall be submitted electronically using the QuestCDN online bidding vBid platform. No paper bids will be accepted.
- 14.2 See Bid Form for a list of documents typically required to be submitted with the Bid.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

- 15.1 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.
- 15.2 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 16 – OPENING BIDS

- 16.1 Bids will be opened as indicated in the Advertisement to Bid. The bid opening can be viewed live via the GoToMeeting information shown below. An abstract of the amounts of the base bids and major alternatives, if any, will be made available to bidders after opening the bids.

The bid opening can be viewed live via GoToMeeting as follows:
Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/811262349>

You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)

United States (Toll Free): 1 866 899 4679

- One-touch: <tel:+18668994679,,811262349#>

United States: +1 (571) 317-3116

- One-touch: <tel:+15713173116,,811262349#>

Access Code: 811-262-349

New to GoToMeeting? Get the app now and be ready when your first meeting starts:

<https://global.gotomeeting.com/install/811262349>

ARTICLE 17 – BIDS REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.1 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.
- 18.2 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.
- 18.3 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.
- 18.4 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Supplier, and other individuals or entities proposed for those portions of the Work for which the identify of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 18.5 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.

- 18.6 Bidder agrees to waive any claim it has or may have against the Owner and the respective employees arising out of or in connection with the administration, evaluation or recommendation of any Bid.
- 18.7 If the Contract is to be awarded, Owner will award the Contract to the lowest responsible responsive Bidder whose Bid is in the best interests of the Project.

ARTICLE 19 – CONTRACT SECURITY AND INSURANCE

- 19.1 The General Conditions set 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 and a certificate of insurance.

ARTICLE 20 – SIGNING OF AGREEMENT

- 20.1 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 ten (10) days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten (10) days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of Drawings with appropriate identification.

END OF SECTION

SECTION 00 41 13

CITY OF DE PERE

BID FORM

PROJECT 21-09

This bid, submitted by the undersigned Bidder to the City of De Pere, in accordance with the Advertisement to Bid, which will be received until 1:00 PM, Thursday, January 13, 2022 is to furnish and deliver all materials, and to perform and do all work on the project designated per Section 01 10 00 Summary of Work.

Bidder has examined and carefully prepared the bid from the plans and specifications and has checked the same in detail before submitting said proposal or bid; and that said bidder or bidder's agents, officer or employees have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal or bid.

Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.

Addendum Date

BASIS OF BID:

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

As stated in the attached Unit Price Bid Schedule.

Unit Prices have been computed in accordance with the General Conditions.

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

TOTAL BID PRICE: \$ _____

TOTAL ALTERNATE PRICE \$ _____

TOTAL BASE BID PLUS ALTERNATE PRICE \$ _____

The City reserves the right to choose the Base Bid or the Base Bid plus Alternate Price.

ATTACHMENTS TO THIS BID

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

- A. Required Bid Security
- B. Unit Price Bid Schedule (Section 00 41 43)
- C. Proposed Products Form (Section 00 43 33)
- D. Tabulation of Subcontractors (Section 00 43 36)

BID SUBMITTAL

This Bid is submitted by _____ of _____,

The Bidder, being duly sworn, does dispose that they are an authorized representative of

Bidder, if Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in Wisconsin is ____/____/____.

Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____

(Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____

(Signature of second joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. Manner of signing for each individual, partnership, and corporation that is a party to joint venture should be in manner indicated above.)

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____ (if applicable)

SECTION 00 41 43

CITY OF DE PERE

PROJECT 21-09

BID SCHEDULE – UNIT PRICE

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
STORM SEWER					
ST-01	Provide 42" RCP Class III Storm Sewer (Natural Backfill)	LF	35	\$ _____	\$ _____
ST-02	Provide 24" RCP Class III Storm Sewer (Natural Backfill)	LF	240	\$ _____	\$ _____
ST-03	Provide 15" RCP Class III Storm Sewer (Natural Backfill)	LF	40	\$ _____	\$ _____
ST-04	Provide 12" RCP Class III Storm Sewer (Natural Backfill)	LF	125	\$ _____	\$ _____
ST-05	Provide 8" PVC Storm Sewer (Natural Backfill)	LF	45	\$ _____	\$ _____
ST-06	Provide 6' Diameter Storm Manhole	VF	9.5	\$ _____	\$ _____
ST-07	Provide 4' Diameter Storm Manhole	VF	15	\$ _____	\$ _____
ST-08	Provide Discharge Structure Pond-West Pond	EA	1	\$ _____	\$ _____
ST-09	Provide Discharge Structure Pond- East Pond	EA	1	\$ _____	\$ _____
ST-10	Connect to Structure and/or Existing Pipe	EA	4	\$ _____	\$ _____
ST-11	Provide 42" RCP Endwall	EA	1	\$ _____	\$ _____
ST-12	Provide 24" RCP Endwall	EA	1	\$ _____	\$ _____
ST-13	Provide 15" RCP Endwall	EA	2	\$ _____	\$ _____
ST-14	Provide 12" RCP Endwall	EA	5	\$ _____	\$ _____
ST-15	Abandon/Remove Existing Storm Sewer and Appurtenances	LS	1	\$ _____	\$ _____
STREET AND DRAINAGE					
SD-01	Provide Clearing and Grubbing	LS	1	\$ _____	\$ _____

Project 21-09
Matthew Drive Pond Reconstruction

City of De Pere

STREET AND DRAINAGE CONTINUED					
SD-02	Unclassified Excavation- Pond and Berm Hauled Offsite	CY	17,800	\$ _____	\$ _____
SD-03	Unclassified Excavation- Pond and Berm to Remain On-Site	CY	950	\$ _____	\$ _____
SD-04	Unclassified Excavation- Pond Sediment	CY	2,250	\$ _____	\$ _____
SD-05	Stripping Topsoil Fill Area	SY	1,500	\$ _____	\$ _____
SD-06	Provide Ditching (East of Pond)	LF	580	\$ _____	\$ _____
SD-07	Landscaping – Topsoil, No Mow Seed, Fertilizer, and Mulch	SY	5,850	\$ _____	\$ _____
SD-08	Landscape-Topsoil, Native Seed (Mesic Prairie), Fertilize, and Mulch	SY	5,950	\$ _____	\$ _____
SD-09	Landscape-Topsoil, Native Seed (Wet Meadow), Fertilize, and Mulch	SY	400	\$ _____	\$ _____
SPECIAL CONSTRUCTION					
SC-01	Provide Silt Fence	LF	2,500	\$ _____	\$ _____
SC-02	Inlet Protection Type D	EA	3	\$ _____	\$ _____
SC-03	Provide Medium Rip Rap with Geotextile Fabric, Type HR	SY	190	\$ _____	\$ _____
SC-04	Tracking Pad	EA	1	\$ _____	\$ _____
SC-05	Pond Dewatering and/or Storm Water Bypass	EA	1	\$ _____	\$ _____
SC-06	Reconstruct Manhole	EA	3	\$ _____	\$ _____
BASE BID TOTAL:					\$ _____

Project 21-09
Matthew Drive Pond Reconstruction

City of De Pere

ALTERNATE BID SCHEDULE					
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT BID
AB-01	Unclassified Excavation for 24 Inch Deep Clay Liner (If Required)	CY	8,150	\$ _____	\$ _____
AB-02	Provide 24 Inch Deep Clay Liner (If Required)	CY	8,150	\$ _____	\$ _____
ALTERNATE BID TOTAL:					\$ _____

SECTION 00 43 13

CITY OF DE PERE

BID BOND

KNOW ALL MEN BY THESE PRESENTS: That _____,

as Principal, hereinafter called Principal, and _____,

as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of _____ dollars (\$_____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presence.

WHEREAS, Principal has made a proposal to the City for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work of Project 21-09 in accordance with drawings and specifications prepared by the Director of Public Works of said City, which proposal is by reference made a part hereof, and is hereinafter referred to as the BID.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall be awarded the contract for said project and Principal shall enter into a contract in accordance with the BID, then this obligation shall be null and void; otherwise it shall remain in full force and effect, provided that:

1. The liability of Surety shall in no event exceed the penalty of this bond.
2. Any suits at law or proceedings, in equity brought or to be brought against Surety to recover any claim hereunder shall be executed within six (6) months from the date of this instrument.

Signed and sealed this _____ day of _____, 20_____.

In the presence of:

WITNESS

PRINCIPAL (SEAL)

WITNESS

SURETY (SEAL)

SECTION 00 43 33

PROPOSED PRODUCTS FORM

The following is a list of material, type or model numbers and manufacturers used in the preparation of this proposal and to be used on this project:

<u>ITEM</u>	<u>MATERIAL</u>	<u>SUPPLIER</u>
Storm Sewer	RCP	
Manholes	RCP	

SECTION 00 43 36

TABULATION OF SUBCONTRACTORS

The following information is submitted which gives the name, business address, and portion of work for each subcontractor that will be used in the work if the bidder is awarded the contract, and no subcontractor doing work in excess of one-half of one percent of the total amount of the bid and who is not listed will be used without the written approval of the Engineer. Additional numbered pages outlining this portion of the proposal may be attached to this page.

<u>PORTION OF WORK</u>	<u>BUSINESS NAME</u>	<u>BUSINESS ADDRESS</u>
Utility Work		
Landscape Restoration		

SECTION 00 51 00

NOTICE OF AWARD

(Contractor)
(Contractor Name)
(Address)
(Address)

Project Description: 21-09 Pond and Drainage System Construction

The City has considered the proposal submitted by you dated (BID DATE) for the above-described project in response to its Advertisement for Bids dated December 17, 2021 and December 24, 2021.

You are hereby notified that the Common Council of the City of De Pere has accepted your bid of (Contract Amount \$_____.00).

You are required to execute the Contract and furnish the required Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said bonds within ten (10) days from the date of this notice, said City will be entitled to consider all your rights arising out of the City's acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The City will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the City.

Dated this ____th day of _____ 2021.

DEPARTMENT OF PUBLIC WORKS

BY: Eric P. Rakers, P.E.
City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____, this the _____ day of _____, 20____

By: _____

Title: _____

SECTION 00 52 13

CONTRACT

This Contract, made and entered into this day _____ (date to be affixed by City), by and between (Contractor Name), hereinafter called Contractor, and the City of De Pere, a municipal corporation of the State of Wisconsin, hereinafter called City.

WITNESSETH: That, in consideration of the covenants and agreements herein contained, to be performed by the parties hereto, and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

ARTICLE I - SCOPE OF WORK

The Contractor shall furnish all materials and all equipment and labor necessary, and perform all work shown on the drawings and described in the specifications for the project entitled Project 21-09 Pond and Drainage System Construction, all in accordance with the requirements and provisions of the following documents, which are hereby made a part of this Contract:

- (a) Advertisement for Bids, dated December 17, 2021 and December 24, 2021.
- (b) Drawings designated for Project 21-09 Pond and Drainage System Construction dated December 17, 2021.
- (c) City of De Pere 2021 Construction Specifications.
- (d) Special Provisions dated December 17, 2021.
- (e) Proposal submitted by (Contractor Name) dated Bid Date.
- (f) Addenda No. dated

ARTICLE II - TIME OF COMPLETION

- (a) The work to be performed under the Contract shall be commenced within (number spelled out) (__) calendar days after receipt of written notice to proceed. The work shall be completed within (Number spelled out) (__) calendar days) or (specific calendar dates) after receipt of Notice to Proceed.
- (b) Time is of the essence with respect to the date of completion herein above stated. Failure to complete the work within the number of calendar days stated in this Article, or interim dates included in the work sequence in Section 01 10 00, Summary of Work, including any extensions granted thereto, shall entitle the City to deduct from the monies due the Contractor an amount equal to Update based on 00 70 00 - General Conditions (Page 27)(\$ per day for each calendar day of delay in the completion of the work. Such amount shall be considered and treated not as a penalty but as liquidated damages, which the City will sustain, by failure of the Contractor to complete the work within the time stated.

ARTICLE III - PAYMENT

- (a) The Contract Sum. The City shall pay to the Contractor for the performance of the Contract the amounts determined for the total number of each of the following units of work completed at the unit price stated thereafter. The number of units contained in this schedule is approximate only, and the final payment shall be made for the actual number of units that are incorporated in or made necessary by the work covered by the Contract.
- (b) Progress Payments. The City shall make payments on account of the Contract as follows:
1. On not later than the fourth Friday of every month the Contractor shall present to the City an invoice covering an estimate of the amount and proportionate value of the work done as verified by the City under each item of work that has been completed from the start of the job up to and including the fourth Friday of the preceding month, and the value of the work so completed determined in accordance with the schedule of unit prices for such items, together with such supporting evidence as may be required. This invoice shall also include an allowance for the cost of such materials and equipment required in the permanent work as have been delivered to the site but not as yet incorporated in the work.
 2. On not later than the third week of the following month, the City shall, after deducting previous payments made, pay to the Contractor 95% of the amount of the approved invoice, retaining 5% of the estimate of work done until 50% of the work has been completed. At 50% completion of the work, the previous retainage shall not yet be paid, but further partial payments shall be made in full to the contractor without additional retainage being taken unless the engineer certifies that the work is not proceeding satisfactorily. If the work is not proceeding satisfactorily, additional amounts may be retained. After substantial completion, an amount retained may be paid to the contractor, keeping retained only such amount as is needed for the remaining work.
 3. The Contractor shall notify the City in writing when all work under this Contract has been completed. Upon receipt of such notice the City shall, within a reasonable time, make the final inspection and issue a final certificate stating that the work provided for in this Contract has been completed and is accepted under the terms and conditions thereof, and that the entire balance due the Contractor as noted in said final certificate is due and payable. Before issuance of the final certificate the Contractor shall submit evidence satisfactory to the City that payrolls, material bills, and other indebtedness connected with the work under this Contract have been paid. The City shall make final payment as soon after issuance of the final certificate as practicable.

ARTICLE IV – CONTRACT DOCUMENTS

(a) Contents

1. The Contract documents consist of the following:
 - a. This Contract (pages 00 52 13-1 to 0052-13-3, inclusive).
 - b. Payment bond (pages 00 61 13-1 to 00 61 13-2, inclusive).
 - c. Performance bond (page 00 61 16-1).
 - d. General Conditions (pages 00 70 00-1 to 00 70 00-27, inclusive).

- e. Specifications as listed in the table of contents of the Project Manual.
 - f. Drawings consisting of ____ sheets with each sheet bearing the following general title: ____ [or] the Drawings listed on attached sheet index.
 - g. Addenda (numbers ____ to ____ inclusive), dated ____.
 - h. Exhibits to this Agreement (enumerated as follows):
 - 1) Contractor's Bid (pages 00 41 13-1 to 00 41 13-3, inclusive).
 - 2) Bid Schedule – Unit Prices (Pages 00 41 43-1 to 00 41 43-, inclusive).
 - 3) Proposed Products Form (Page 00 43 33-1).
 - 4) Tabulation of Subcontractors (page 00 43 36-1).
 - 5) Documentation submitted by Contractor prior to Notice of Award (00 51 00-1).
 - i. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - 1) Notice to Proceed (Page 00 55 00-1).
 - 2) Change Orders.
2. The documents listed in Paragraph (a) Contents, are attached to this Agreement (except as expressly noted otherwise above).
3. There are no Contract Documents other than those listed above in this Article IV.

IN WITNESS WHEREOF, the parties hereto have executed this Contract, the day and year first written above.

(WITNESS) (CONTRACTOR) (SEAL)

(WITNESS) BY: _____

(TITLE)

BY: _____

(TITLE)

CITY OF DE PERE (SEAL)

Approved as to Form By: _____ (City Attorney)

Sufficient funds are available to provide for the payment of this obligation.

(COMPTROLLER)

BY: _____
(MAYOR)

BY: _____
(CITY CLERK)

SECTION 00 55 00

NOTICE TO PROCEED

Date: _____

(CONTRACTOR NAME)
(ADDRESS)
(ADDRESS)

PROJECT: 21-09 Pond and Drainage System Construction

You are hereby notified to commence work in accordance with the CONTRACT dated _____, within ten (10) days of this Notice. All work under this contract shall be completed within _____ (NUMBER IN WORDS) (___#) consecutive days from the start of construction or _____ (DATE) whichever comes first.

Department of Public Works

By: Eric P. Rakers, P.E.
Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____, this _____ day of _____, 20____.
Company Name

Signature

BY: _____
Printed Name

TITLE: _____

SECTION 00 61 13

CITY OF DE PERE

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR NAME), as Principal, hereinafter called Contractor, and _____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called the City, for the use and benefit of claimants as herein below defined in the amount _____ (CONTRACT AMT. SPELLED OUT) (\$) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City) entered into a contract with City for Project 21-09, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payments to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with Contractor or with a subcontractor of Contractor for labor, material, or both, used or reasonably required for use in the performance of the contract, labor and material being construed to include that part of water, gas, power, lights, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the contract.
2. The above named Contractor and Surety hereby jointly and severally agree with the City that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant may sue on this bond for the use of such claimant in the name of the City, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon, provided, however, that the City shall not be liable for the payment of any costs or expenses of any such suit.
3. No suit or action shall be commenced hereunder by any claimant:
 - a. Unless claimant shall have given written notice to any two of the following: The Contractor, the City, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor, City, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of Wisconsin, save that such service need not be made by a public officer.

Project 21-09
Matthew Drive Pond Reconstruction

City of De Pere

- b. After the expiration of one (1) year following the date on which Contractor ceased work on said CONTRACT.
 - c. Other than in a state court of competent jurisdiction in and for the County or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.
4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens, which may be filed or recorded against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

SIGNED AND SEALED THIS _____ DAY OF _____, 20__.

In Presence of:

_____ (WITNESS)	_____ (CONTRACTOR)
_____ (WITNESS)	_____ (SURETY)

SECTION 00 61 16

CITY OF DE PERE

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That (CONTRACTOR'S NAME), as Principal, hereinafter called Contractor, and _____, as Surety, hereinafter called Surety, are held and firmly bound unto the City of De Pere, a municipal corporation of the State of Wisconsin, as Obligee, hereinafter called City, in the amount of (AMOUNT WRITTEN OUT) (\$_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assign, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ (date to be affixed by City), entered into a contract with the City for Project 21-09, in accordance with drawings and specifications prepared by the Director of Public Works of said City, which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Contractor shall promptly and faithfully perform said CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by the City to be in default under the CONTRACT, the City having performed City's obligations there under, the Surety may promptly remedy the default, or shall promptly

1. Complete the CONTRACT in accordance with its terms and conditions or
2. Obtain a bid or bids for submission to City for completing the CONTRACT in accordance with its terms and conditions, and upon determination by the City and Surety of the lowest responsible bidder, arrange for a contract between such bidder and City make available as work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable by City to Contractor under the CONTRACT and any amendments thereto, less the amount properly paid by City to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the CONTRACT falls due. No right of action shall accrue on this bond to or for the use of any person or corporation other than the owner named herein or the heirs, executors, administrators or successors of City.

SIGNED AND SEALED THIS _____ DAY OF _____, 20_____.

In the Presence of:

_____ (WITNESS)	_____ (CONTRACTOR)	_____ (SEAL)
_____ (WITNESS)	_____ (SURETY)	_____ (SEAL)

SECTION 00 62 76

APPLICATION FOR PAYMENT

Contractor's Application for Payment No.

Application Period:	Application Date:
Owner: City of De Pere	Contractor:
	Contractor's Project No.:

APPLICATION FOR PAYMENT

Change Order Summary

Approved Change Orders			1. ORIGINAL CONTRACT PRICE:.....	
Number	Additions	Deductions	2. Net change by Change Orders and Written Amendments (+ or -):.....	\$0.00
			3. CURRENT CONTRACT PRICE (Line 1 plus Line 2):.....	\$0.00
			4. Total completed and stored to date Column H on Progress Estimate:.....	\$0.00
			5. Retainage (per Agreement):	
			a. Work Completed - Column H (95% up to 50% of Contract or 2.5% of 100% of Contract)	\$0.00
Total	\$0.00	\$0.00	6. AMOUNT ELIGIBLE TO DATE (Line 4 minus 5):.....	\$0.00
NET CHANGE BY CHANGE ORDERS:			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	\$0.00
			8. AMOUNT DUE THIS APPLICATION (Line 6 minus Line 7):.....	\$0.00

CONTRACTOR'S CERTIFICATION

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

By:	Date:

Payment of:	\$	
	(Line 8 or other - attach explanation of other amount)	
is recommended by:		
	(Contractor)	(Date)
Payment of:	\$	
	(Line 8 or other - attach explanation of other amount)	
is recommended by:		
	(Owner)	(Date)

SECTION 00 65 16

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:

Owner:

Owner's Contract No.:

Contractor:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Contractor and Engineer, and found to be substantially complete. The Date of Substantial completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

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

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities

☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

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

Executed by Engineer

Date

Accepted by Contractor

Date

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. References
 - 2. Work Covered by the Contract Documents
 - 3. Work Sequence
 - 4. Use of Premises
 - 5. Warranty
 - 6. Work by Others
 - 7. Project Utility Sources
 - 8. Miscellaneous Provisions

1.2 REFERENCES

- A. General Specifications. The work under this contract shall be in accordance with the City of De Pere, 2021 Construction Specifications and these Special Provisions and plans, and the latest edition of the Wisconsin Department of Transportation Standards Specifications for Highway and Structure Construction, where referenced in the City Specifications.
- B. Definitions. Any reference to the “state” or the “department” in said Standard Specifications shall mean the “City of De Pere” for the purposes of this contract.
- C. Industry Standards
 - 1. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
 - 2. Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
 - 3. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
 - 4. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

5. Each section of the specifications generally includes a list of reference standards normally referred to in that respective section. The purpose of this list is to furnish the Contractor with a list of standards normally used for outlining the quality control desired on the project. The lists are not intended to be complete or all inclusive, but only a general reference of standards that are regularly referred to.
6. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Identification

1. Project Location
 - a. East Matthew Drive and Suburban Drive
2. Work will be performed under the following prime contract:
 - a. 21-09 Matthew Drive Pond Reconstruction

B. The Work includes:

1. Relay and/or new storm sewer and associated appurtenances.
2. Unclassified excavation.
3. Grading
4. Erosion control.
4. Landscaping and restoration.

1.4 WORK SEQUENCE

- A. Project shall be completed by August 31, 2022.
- B. Project shall not start prior to May 1, 2022.
- C. Conduct construction activities to maintain access to businesses and residences throughout construction.

1.5 USE OF PREMISES

- A. Contractor shall have full use of the premises for construction operations, including use of the Project Site, as allowed by law, ordinances, permits, easement agreements and the Contract documents.

- B. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of the Project.
- C. The Project Site is limited to property boundaries, rights-of-way, easements, and other areas designated in the Contract Documents.
- D. Provide protection and safekeeping of material and products stored on or off the premises.
- E. Move any stored material or products which interfere with operations of Owner or other Contractors.

1.6 WARRANTY

- A. The Contractor warrants and guarantees to the City that all work shall be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects will be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this proposal.
- B. If within one (1) year after the date of contract work completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by a special provision of the Contract Documents, any work is found to be defective, the Contractor shall comply in accordance with the City's written instructions. These written instructions will include either correcting such defective work or, if it has been rejected by the City, removing it from the site and replacing it with non-defective work. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk or loss or damage, the City may have the defective work corrected or the rejected work removed and replaced. All direct and indirect costs of correction or removal and replacement of defective work, including compensation for additional professional services, shall be paid by the Contractor.

1.7 WORK BY OTHERS

- A. Wisconsin Public Service (WPS) will be relocating the electric line and utility pole. This work will occur simultaneously with the pond construction. Coordinate all activities with WPS.
- B. Coordinate light pole relocation with the property owner on the south side of the project.
- C. Cooperate fully with separate contractors and/or Owner so work by others may be carried out smoothly, without interfering with or delaying work under this Contract.

1.8 PROJECT UTILITY SOURCES

- A. Green Bay Metropolitan Sewer District (NEW Water), Lisa Sarau, (lsarau@newwater.us) (920-438-1039)

- B. AT&T, Joe Kassab, (jk572k@att.com) (920-202-4002)
- C. Wisconsin Public Service, Bob Laskowski, (rtlaskowski@wisconsinpublicservice.com) (920-617-2775)
- D. Charter, Vince Albin, (vince.albin@charter.com) (920-378-0444)
- E. Nsight, Rick Vincent, (rick.vincent@nsight.com) (920-617-7316)
- F. TDS Metrocom, Steve Jakubiec, (steve.jakubiec@tdstelecom.com) (920-882-4166)
- G. Net-Lec (Mi-Tech Services), Dennis Lafave, (dlafave@mi-tech.us) (920-619-9774)
- H. CenturyLink, Relocation Team, (nationalrelo@centurylink.com) (800-871-9244)
- I. Central Brown County Water Authority, Rob Michaelson, (rmichaelson@mpu.org) (920-686-4354)

1.9 MISCELLANEOUS PROVISIONS

- A. Notification to Residents –notify individually all residents and businesses 2-weeks prior to the start of operations, giving an estimated time that vehicle movement will be limited or prohibited. Property owners shall be notified 24-hours prior to closing a drive.
- B. Access to the site will be from Suburban Drive or East Matthew Drive. Only one access off the road will be permitted.
- C. After excavation the City's geotechnical engineer will evaluate the clay on-site. If soils other than clay with a hydraulic conductivity of 1×10^{-7} cm/sec or less are encountered, the engineer will determine if disk or a clay liner is required per WDNR Technical Standard 1001.
 - 1. If directed by the Engineer, disk pond side slopes (below NWSEL) and bottom to a depth of 12-inches prior to topsoil placement. Subsequently, the disked soils shall be re-compacted with a sheepsfoot roller followed by a smooth drum roller to a minimum of 93% of the modified proctor maximum dry density. Disking and re-compaction shall be paid for at the unit price bid if utilized.
 - 2. If sandy, silty, or poor soils are encountered in the ponds, the Engineer will determine if a clay liner is required. The City's Geotechnical Engineer shall be onsite during clay liner installation to perform observation, testing and evaluation of the placement of the liner to ensure proper installation. Provide a two-year warranty or correction period for the liner.
- D. Protect existing curb with ramping throughout construction.
- E. Provide traffic control for curb ramping. Parking lane closures will be permitted during construction.

- F. Pond sediment has been sampled and meets the requirements of General Fill under the State Administrative Code, NR 528.
 - 1. Placement shall adhere to NR 528.07, End Uses of Accumulated Sediment.
 - 2. Separation of the sediment shall adhere to NR 528.04, Table 1 – Locational Criteria for Management of Accumulated Sediment.
- G. Tracking pad location for access can be modified with Engineer approval.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 22 02

MEASUREMENT AND PAYMENT STORM SEWER

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|--|--------------------------------------|
| A. Section includes: | <u>Bid Item No.</u> |
| 1. Storm Sewer Mains (Natural Backfill) | ST-01, ST-02, ST-03,
ST-04, ST-05 |
| 2. Storm Sewer Manholes | ST-06, ST-07 |
| 3. Storm Sewer Control Structures | ST-08, ST-09 |
| 4. Connect to Structure and/or Existing Pipe | ST-10 |
| 5. Concrete Endwall Section | ST-11, ST-12, ST-13, ST-14 |
| 6. Abandon/Remove Existing Storm Sewer and Appurtenances | ST-15 |
- B. Unit Prices include:
1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
 2. The method of measurement for payment.
 3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

- A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for storm sewer systems.
- B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
1. Traffic Control.
 2. Sawcutting asphalt and/or concrete.
 3. Removal, hauling and disposal of surface materials including road pavement, curb and gutter, sidewalk, driveways and other pavement surfaces in the trench area and as shown on the drawings.
 4. Dewatering.
 5. Excavation.
 6. Open trench installation method (unless bid item specifies other method).
 7. Pipe bedding.
 8. Backfilling and compacting native obtained from the excavation.

9. Supplying, hauling, backfilling and compacting granular material.
10. Loading, hauling and disposing of surplus excavated material.
11. Landscaping – turf establishment surface restoration and trees and bushes damaged during construction.
12. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
13. Site access requirements including temporary aggregate material as required for local traffic access.
14. Bulkhead and abandon existing storm sewer with flowable fill as shown on drawings.
15. If crossing or undermining of existing public or private utility, then include:
 - a. Maintaining the utility in service.
 - b. Replacing of existing utilities, if damaged.
 - c. Providing support and bedding material.
16. Dust control.
17. Remove and replace existing mailboxes and traffic signs.
18. Restroom facilities.
19. Easement and right-of-way requirements.
20. Construction staking and other survey work not provided by the Engineer.
21. Regulatory requirements.
22. Preconstruction videotaping and video equipment.
23. Quality assurance and quality control testing and inspections.
24. Shop drawings and other submittals.

1.3 STORM SEWER MAINS (NATURAL BACKFILL)

- A. The unit price for Storm Sewer Main (Natural Backfill) work includes:
 1. General Work Items of Article 1.2.
 2. Storm sewer pipe and fittings of material stated in the Unit Price Bid Schedule and installed using the open trench method.
 3. Excavation, breakdown and removal of abandoned piping inside the trench area, including plugging of existing connections.
 4. Excavation, breakdown and removal of abandoned pipeline structures inside the trench area, including plugging of existing connections.
 5. Install Clay Dam per plans.
- B. Measurement of payment will be the actual horizontal length along the centerline of the installed sewer from centerline of the manhole to centerline of manhole with no deductions for manholes, sewer services branches and other fittings.
- C. The unit of measurement for payment is linear feet.

1.4 STORM SEWER MANHOLES

- A. The unit price for Storm Sewer Manholes work includes:

1. General Work Items of Article 1.2.
2. Precast reinforced concrete components.
3. Joint flexible gasket material.
4. Grout seal between the manhole and structure and the sewer pipe.
5. Adjusting rings and bituminous plastic cement sealant at chimney.
6. Manhole steps.
7. Manhole frame and cover.
8. Bedding material.
9. Sewer pipe stub with connections and watertight plug (where required).
10. Final casting adjustment.

B. Measurement for payment will be the distance from the invert of the lowest sewer to the top of the frame and cover as set.

C. The unit of measurement for payment is vertical feet.

1.5 STORM SEWER CONTROL STRUCTURES

A. The unit price for Storm Sewer Control Structure work includes:

1. General Work Items of Article 1.2.
2. Precast reinforced concrete components.
3. Joint flexible gasket material.
4. Grout seal between the manhole and structure and the sewer pipe.
5. Installation of the Grate.
6. Bedding material.
7. Sewer pipe stub with connections and watertight plug (where required).

B. Measurement for payment will be each.

C. The unit of measurement for payment is each.

1.6 CONNECT TO EXISTING STRUCTURE AND/OR PIPE

A. The unit price for Connect to Existing Structure and/or Pipe work includes:

1. General Work Items from Article 1.2.
2. Storm sewer pipe same material strength or better than sewer main. Provide Fernco with stainless steel sheer bands and connection water tight seal for plastic pipe or a concrete collar for concrete pipe.
3. Connect to new manhole.
4. Backfilling and compaction.

B. Measurement for payment will be the actual number complete.

C. The unit of measurement for payment is each.

1.7 FLARED END SECTION

- A. The unit price for Flared End Section includes:
 - 1. General Work Items of Article 1.2.
 - 2. Precast concrete components.
 - 3. Anchors to storm sewer pipe.
- B. Measurement for payment will be the actual number installed.
- C. The unit of measurement for payment is each.

1.8 ABANDON/REMOVE STORM SEWER AND APPURTENANCES

- A. The unit price for Abandon/Remove Storm Sewer and Appurtenances work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Excavating.
 - 3. Install bulkheads and abandon storm sewer and/or structures.
 - 4. Removing existing storm sewer and/or structures where in conflict with other utilities.
 - 5. Providing and placing flowable fill.
 - 6. Backfilling and compacting.
 - 7. Removal and disposal as shown on the Drawings.
- B. Measurement for payment will not be made. This includes all of the project area.
- C. The unit of measurement for payment is lump sum.

END OF SECTION

SECTION 01 22 04

MEASUREMENT AND PAYMENT STREET AND DRAINAGE CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|--|-------------------------------|
| A. Section includes: | <u>Bid Item No.</u> |
| 1. Clearing and Grubbing | SD-01 |
| 2. Unclassified Excavation | SD-02, SD-03, SD-04,
AB-01 |
| 3. Provide 24" Deep Clay Liner | AB-02 |
| 4. Topsoil Stripping in Fill Area | SD-05 |
| 5. Ditching | SD-06 |
| 6. Landscaping – Topsoil, Seed, Fertilize, and Erosion Mat | SD-07, SD-08, SD-09 |
- B. Unit Prices include:
1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
 2. The method of measurement for payment.
 3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

- A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for street and drainage systems.
- B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
1. Traffic Control.
 2. Sawcutting asphalt and/or concrete.
 3. Removal, hauling and disposal of surface materials including road pavement, curb and gutter, sidewalk, driveways and other pavement surfaces in the trench area and as shown on the drawings.
 4. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site.
 5. Site access requirements including temporary aggregate material as required for local traffic access.
 6. Dust control.
 7. Remove and replace existing mailboxes and traffic signs.

8. Restroom facilities.
9. Construction staking and other survey work not provided by the Engineer.
10. Regulatory requirements.
11. Quality assurance and quality control testing and inspections.
12. Final casting and valve box adjustment.
13. Shop drawings and other submittals.

1.3 CLEARING AND GRUBBING

- A. The unit price for Clearing and Grubbing work includes:
 1. General Work Items of Article 1.2.
 2. Cutting and disposing of trees, brush, windfalls, logs and other vegetation.
 3. Removing and disposing of roots, stumps, stubs, logs and other timber.
 4. Stripping and stockpiling topsoil.
- B. Measurement for payment will not be made.
- C. The unit of measurement for payment is lump sum.

1.4 UNCLASSIFIED EXCAVATION

- A. The unit price for Topsoil and Unclassified Excavation work includes:
 1. General Work Items of Article 1.2.
 2. Removal of topsoil to depth available.
 3. Hauling and stockpiling topsoil.
 4. Excavation to subgrades shown on the Drawings.
 5. Hauling of unclassified material.
 6. Placing unclassified material in fill areas shown on the Drawings and the placement of topsoil.
 7. Compaction of fill areas.
 8. Respreading topsoil to final grades shown on the Drawings.
 9. Disposal of surplus topsoil, unclassified material and unsuitable material.
 10. Preparation of disposal site and transportation of material over an Engineer approved haul route from the site including all loading and dumping of material.
 11. Finish grading.
- B. Measurement of payment will be made based on the computed volume by comparing the triangulated surfaces and will be the basis for payment.
 1. The volume of material hauled off-site will be based on the total volume of excavation which is the original surface to the final grading surface, subtracting the volume allocated to excavation placed on-site and the volume allocated to sediment.
 2. Upon completion of the pond sediment removal, the engineer will perform a survey to determine the volume of material placed.

3. After stripping the topsoil for the fill area, the engineer will perform a survey to establish the base of the fill. After completion of fill placement, but prior to placing topsoil, the engineer will complete an additional survey to establish the final surface and volume of material placed.
4. If a clay liner is required, the engineer will survey the excavation below the planned bottom of the pond. The volume of clay liner will be calculated based on this surface compared with the pond planned bottom. On the safety shelf, additional excavation will be required to accommodate the 4" of topsoil. The 4" of topsoil will be subtracted from the volume.

C. The unit of measurement for payment is cubic yards.

1.5 24" CLAY LINER

- A. The unit price for 24" Clay Liner work includes:
 1. General Work Items of Article 1.2.
 2. Testing of material at off-site location.
 3. Providing clay liner material to create a minimum depth of 24".
 4. Finished grading and compaction.
- B. Measurement of payment will be based on the computed volume by comparing the triangulated surfaces and will be the basis for payment.
- C. The unit of measurement for payment is cubic yards.

1.6 TOPSOIL STRIPPING

- A. The unit price for Topsoil Stripping work includes:
 1. General Work Items of Article 1.2.
 2. Removal of topsoil in fill areas.
 3. Hauling and stockpiling topsoil.
 4. Placing unclassified material in stripped areas to subgrades shown on the Drawings.
 5. Compaction of subgrade and fill areas.
 6. Respreading topsoil to final grades shown on the Drawings.
 7. Finish grading.
- B. Measurement for payment will be the area of topsoil stripped in the fill areas.
 1. The fill area for this project is the access road on the east side of the pond at the access road.
- C. The unit of measurement for payment is square yards.

1.7 DITCH GRADING

- A. The unit price for Ditch Grading work includes:

1. General Work Items of Article 1.2.
2. Unclassified excavation for the ditch.
3. Hauling excess material off-site.
4. Finish grading.

B. Measurement for payment will be the actual horizontal length along the centerline of the ditch bottom.

1. Restoration is included under bid item for Landscaping – Topsoil, Seed, Fertilize, and Mulch/Erosion Mat.

C. The unit of measurement for payment is linear feet.

1.8 LANDSCAPING- TOPSOIL, SEED, FERTILIZE AND EROSION MAT

A. The unit price for Landscaping- Topsoil, Seed, Fertilize, and Erosion Mat work includes:

1. General Work Items of Article 1.2.
2. Provide 4" topsoil or salvaged topsoil.
3. Provide seed.
4. Provide fertilizer.
5. Provide mulch or erosion mat (per bid item).
6. Provide maintenance.

B. Measurement for payment will be the width and length not greater than fifteen (15) feet beyond the top of either side of ditches, the slope intercept, or fill limits.

1. Haul roads shall be approved by the engineer to be eligible for payment for restoration.

C. The unit of measurement for payment is square yard.

END OF SECTION

SECTION 01 22 05

MEASUREMENT AND PAYMENT SPECIAL CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

- | | |
|--|---------------------|
| A. Section includes: | <u>Bid Item No.</u> |
| 1. Provide Silt Fence | SC-01 |
| 2. Inlet Protection Type D | SC-02 |
| 3. Rip Rap (Medium) with Geotextile Fabric Type HR | SC-03 |
| 4. Tracking Pad | SC-04 |
| 5. Pond Dewatering and/or Storm Water Bypass | SC-05 |
| 6. Reconstruct Manhole | SC-06 |
- B. Unit Prices include:
1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all unit price items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
 2. The method of measurement for payment.
 3. The price per unit for payment.

1.2 GENERAL WORK ITEMS

- A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for special construction.
- B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.
1. Traffic Control.
 2. Loading, hauling and disposing of surplus material.
 3. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site beyond the limits identified.
 4. Dust control.
 5. Restroom facilities.
 6. Construction staking and other survey work not provided by the Engineer.
 7. Regulatory requirements.
 8. Quality assurance and quality control testing and inspections.
 9. Shop drawings and other submittals.

1.3 SILT FENCE EROSION CONTROL

- A. The unit price for Silt Fence Erosion Control work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Provide fabric and post.
 - 3. Excavate to anchor fabric and compact soil or provide soil class C-3 to anchor the fabric.
 - 4. Inspection and maintenance of the installed silt fence.
 - 5. Removal of the silt fence.
 - 6. Finish grading.
 - 7. Topsoil, seeding, fertilizing, and mulching area in the vicinity of the removed silt fence which does not have established turf.
- B. Measurement of payment will be the actual horizontal length installed.
- C. The unit of measurement for payment is linear feet.

1.4 INLET PROTECTION EROSION CONTROL

- A. The unit price for Inlet Protection Erosion Control work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Provide geotextile and wood materials for type shown on the Drawings.
 - 3. Placing inlet protection system.
 - 4. Inspection and maintenance of the installed inlet protection.
 - 5. Removal of the inlet protection.
 - 6. Cleaning debris buildup around inlet.
- B. Measurement for payment will be actual number of inlet protection erosion control installed.
- C. The unit of measurement for payment is each.

1.5 RIP RAP EROSION CONTROL

- A. The unit price for Rip Rap Erosion Control work includes:
 - 1. General Work Items of Article 1.2.
 - 2. Provide rip rap material and geotextile fabric.
 - 3. Excavate and place rip rap material.
- B. Measurement for payment will be the actual area installed.
- C. The unit of measurement for payment is square yards.

1.6 TRACKING PAD

- A. The unit price for Tracking Pad work includes:

1. General Work Items of Article 1.2.
2. Install to the dimensions as shown on the drawing or specified elsewhere.
3. Providing filter fabric.
4. Providing crushed aggregate base course (3 inch clear stone).
5. Daily maintenance of aggregate.
6. Removal of aggregate and restore with topsoil, seed, fertilizer and mulch.

B. Measurement for payment will be the actual number of tracking pads installed.

C. The unit of measurement for payment is each.

1.7 POND DEWATERING/STORM WATER BYPASSING

A. The unit price for Pond Dewatering/Storm Water Bypassing work includes:

1. General Work Items of Article 1.2.
2. Provide sand bag barrier (or approved equal) at pond outfall.
3. Dewater pond throughout construction of pond.
4. Remove barrier after construction.

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum.

1.8 MANHOLE RECONSTRUCT

A. The unit price for Manhole Reconstruct work includes:

1. General Work Items of Article 1.2.
2. Removal of the casting, existing adjusting rings and sections of structure.
3. Providing precast cone section for manholes.
4. Providing concrete adjustment rings and a 2 inch rubber riser ring from the WisDOT approved product list.
5. Bituminous plastic cement sealing the exterior of the adjusting rings and casting.
6. The ring will be secured to the precast section with a 3 ½ inch wide Kent Seal or equal.
7. Above the concrete ring attach ¼ inch thru 3 inch thick ring using two 5/16 inch bead above and below the ring of sealant type as recommended by the rubber manufacturer.
8. Reinstall casting.
9. Initial and final adjustment.
10. Backfilling and compacting.

B. Measurement for payment will be the actual number of structure reconstructed.

C. The unit of measurement for payment is each.

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes:

1. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Unit Price work will be the Schedule of Values used as the basis for reviewing Applications for Payment.**

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as recommended by the Engineer and approved by Owner.**
- B. The date for each progress payment should be the 3rd Wednesday of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends the 4th Friday of the Month.**
- C. Use forms provided by Engineer for Applications for Payment. Sample copy of the Application for Payment and Continuation Sheet is included in Section 00 62 76.**
- D. Application Preparation Procedures**
1. When requested by the Contractor, the Engineer will determine the actual quantities and classifications of Unit Price Work performed.
 - a. Preliminary determinations will be reviewed with the Contractor before completing Application for Payment.
 - b. Engineer will complete the Application for Payment based on Engineer's decision on actual quantities and classifications.
 - c. Engineer will submit three original copies of Application for Payment to Contractor for certification of all three original copies.
 - d. Contractor shall submit signed Application for payment to Owner for approval within time frame agreed to at the Preconstruction Conference.
 2. If payment is requested for materials and equipment not incorporated in the Work, then the following shall be submitted with the Application for Payment:
 - a. Evidence that materials and equipment are suitably stored at the site or at another location agreed to in writing.

- b. A bill of sale, invoice, or other documentation warranting that the materials and equipment are free and clear of all liens.
 - c. Evidence that the materials and equipment are covered by property insurance.
- 3. Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Contractor.
- E. With each Application for Payment, submit waivers of liens from subcontractors and suppliers for the construction period covered by the previous application.
 - 1. Submit partial waivers on each item for amount requested before deduction for retainage on each item.
 - 2. When an application shows completion for an item, submit final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work shall submit waivers.
 - 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application.
 - 5. Submit waivers of lien on forms executed in a manner acceptable to Owner.
- F. The following administrative actions and submittals shall precede or coincide with submittal of first Application for Payment:
 - 1. List of subcontractors.
 - 2. Schedule of Values (For Lump Sum Work).
 - 3. Contractor's construction schedule.
- G. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. Consent of Surety to Final Payment.
 - 5. Final lien waivers as evidence that claims have been settled.
 - 6. Final liquidated damages settlement statement.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 32 33

CONSTRUCTION PHOTOGRAPHS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Photographs for utility construction sites.

1.2 SUBMITTALS

- A. Submit electronic files of each photographic view within seven (7) days of taking photographs.

1.3 QUALITY ASSURANCE

- A. Photographs are to be submitted to the Engineer for approval prior to the start of construction.

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 UTILITY AND STREET CONSTRUCTION SITES

- A. Prior to start of construction provide sufficient photographs to adequately show the existing facilities and conditions within and adjacent to the construction Site to serve as a guide for final restoration including:
 - 1. Roads including shoulders and/or curb and gutter.
 - 2. Sidewalks, parking areas, and driveways.
 - 3. Utility structures.
 - 4. Landscaping including signs, plantings, walls, fences, trees, shrubbery, etc.
 - 5. Mailboxes.
 - 6. Drainage facilities including culverts, inlets, ditches.
 - 7. Building structures.
- B. During construction provide sufficient photographs (a minimum of one per 100 feet of installed utility) to adequately show construction means, methods, and Site conditions including:
 - 1. Crossings of other utilities.
 - 2. Exposure of existing structures.
 - 3. Soil conditions.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for submittals:
 - 1. Progress Schedule.
 - 2. Schedule of Shop Drawings and Sample Submittals.
 - 3. Shop Drawings.
- B. Failure to meet Submittal requirements to the satisfaction of the Engineer will constitute unsatisfactory performance of the work in accordance with the Contract Documents, therefore, the Engineer may recommend to the Owner that all or a portion of payments requested during the corresponding pay period be withheld until these requirements are met.

1.2 SUBMITTAL PROCEDURES

- A. Coordination: Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - 3. To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.
 - a. Allow two weeks for initial submittal.
 - b. Allow two weeks for reprocessing each submittal.
 - c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 - 1. Assign a reference number to each submittal and re-submittal.
 - 2. Provide a space approximately four (4) by five (5) inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - 3. Include the following information on the label for processing and recording action taken.

- a. Project name.
 - b. Date.
 - c. Name and address of the Engineer.
 - d. Name and address of the Contractor.
 - e. Name and address of the subcontractor.
 - f. Name and address of the supplier.
 - g. Name of the manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 4. Each submittal shall be stamped by the Contractor indicating that submittal was reviewed for conformance with the Contract Documents. The Engineer will not accept unstamped submittals.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal to the Engineer. The Engineer will not accept submittals received from sources other than the Contractor.
1. On the transmittal, record relevant information and requests for Engineer action. On a form, or separate sheet, record deviations from Contract Document requirements, including variations, limitations, and justifications. Include Contractor's certification that information complies with Contract Document requirements.

1.3 CONTRACTOR'S PROGRESS SCHEDULE

- A. Prepare and submit to the Engineer within 10 (ten) days after the Effective Date of the Agreement, four copies of a preliminary progress schedule of the work activities from Notice to Proceed until Substantial Completion.
1. Provide sufficient detail of the work activities comprising the schedule to assure adequate planning and execution of the work, such that in the judgment of the Engineer, it provides an appropriate basis for monitoring and evaluation of the progress of the work. A work activity is defined as an activity which requires substantial time and resources (manpower, equipment, and/or material) to complete and must be performed before the contract is considered complete.
 2. The schedule shall indicate the sequence of work activities. Identify each activity with a description, start date, completion date and duration. Include, but do not limit to the following items, as appropriate to this contract:
 - a. Shop drawing review by the Engineer.
 - b. Excavation and grading.
 - c. Asphalt and concrete placement sequence.
 - d. Restoration.
 - e. Construction of various segments of utilities.
 - f. Subcontractor's items of work.
 - g. Allowance for inclement weather.
 - h. Contract interfaces, date of Substantial Completion.
 - i. Interfacing and sequencing with existing facilities and utilities.

- j. Sequencing of major construction activities.
 - k. Milestones and completion dates.
- B. Distribution: Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Subcontractors, and other parties required to comply with scheduled dates. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.
- D. Punch List: Prepare and submit to the Engineer within ten (10) days after substantial completion a detailed progress schedule for outstanding work and punch list items.

1.4 SCHEDULE OF SHOP DRAWINGS AND SAMPLE SUBMITTALS

- A. Submit four (4) hard copies or electronic copies of preliminary submittal schedule in accordance with the General Conditions of the Contract and as follows:
- 1. Coordinate submittal schedule with the subcontractors, Schedule of Values, and of products as well as the Contractor's Progress Schedule.
 - 2. Prepare the schedule in chronological order. Provide the following information:
 - a. Scheduled date for the first submittal.
 - b. Related Section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of the subcontractor.
 - e. Description of the part of the work covered.
 - f. Scheduled date for the Engineer's final release or approval.
- B. Distribution: Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Subcontractors, and other parties required to comply with scheduled dates. Post copies in the field office. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

- A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or

copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

- B. Collect product data into a single submittal for each element of construction of system. Product data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 1. Mark each copy to show actual product to be provided. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
- C. Do not use shop drawings without an appropriate final stamp indicating action taken.
- D. Submittals: Submit four (4) copies of each required submittal. The Engineer will retain two (2) copies, and return the others to the Contractor marked with action taken and corrections or modifications required.
- E. Distribution: Furnish copies of reviewed submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Maintain one copy at the project site for reference.
 - 1. Do not proceed with installation until a copy of the Shop drawing is in the Installer's possession.
 - 2. Do not permit use of unmarked copies of the Shop Drawing in connection with construction.

1.6 ENGINEER'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly. The Engineer will stamp each submittal with a uniform action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:
 - 1. "No Exceptions Taken": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
 - 2. "Make Corrections Noted": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.

3. "Amend and Resubmit": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Amend and Resubmit" at the Project Site or elsewhere where work is in progress.
 4. "Rejected – See Remarks": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Rejected and Resubmit" at the Project Site or elsewhere where work is in progress.
- B. Unsolicited Submittals: The Engineer will return unsolicited submittals to the sender without action.

PART 2 – PRODUCTS

PART 3 – EXECUTION

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Underground Utilities.
 - 2. Property Monuments.
 - 3. Traffic Control.
 - 4. Permits for Project.

1.2 UNDERGROUND UTILITIES

- A. Under the provisions of Wisconsin Statutes, Section 182.0175, all contractors, subcontractors, and any firm or individual intending to do work on this Contract shall contact all utility firms in the affected area of construction a minimum of three (3) working days prior to beginning construction so that affected utilities will be located and marked.

1.3 PROPERTY MONUMENTS

- A. Protect iron pipe monuments from movement.
- B. The cost of replacement of any monuments moved or destroyed during construction shall be the Contractor's responsibility.
- C. Perpetuation of destroyed or moved monuments shall be performed in accordance with state statutes by a registered land surveyor.

1.4 TRAFFIC CONTROL

- A. Provide traffic control facilities including barricades, signs, lights, warning devices, pavement markings, flaggers, etc.
- B. Construct and use traffic control facilities in accordance with the U.S. D. O. T. Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways.
- C. Maintain traffic control devices as required to properly safeguard the public travel through final completion, including during periods of suspension of work.

1.5 PERMITS FOR PROJECT

- A. The following permits are being obtained by the Owner:

1. WDNR

- B. Any costs associated with violations pertaining to the NOI permit will be the responsibility of the Contractor.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Engineering Surveys Provided by the Engineer.
 - 2. Engineering Surveys Provided by the Contractor.

1.2 SUBMITTALS

- A. None

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 PREPARATION

- A. Investigate and verify the existence and location of site improvements, utilities, and other existing facilities.
- B. Before construction, verify the location of invert elevations at points of connection of sanitary sewer, storm sewer, water piping and underground electrical services.
- C. Furnish information to the Engineer and the appropriate utility regarding conflicts that are necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction.
- D. Provide the Engineer two (2) working days advance notification when ready for engineering surveys for construction to be provided by the Engineer.

3.2 ENGINEERING SURVEYS TO BE PROVIDED BY THE ENGINEER

- A. General
 - 1. Establish benchmarks for construction as shown on the drawings.
 - 2. Establish control points as shown on the drawings.
- B. Gravity Sewer Systems and Water Distribution Systems
 - 1. Provide construction reference stakes set for pipe construction location at critical changes in horizontal and vertical alignment.

2. Provide construction stakes for location of pipe at connections.

C. New Road Construction

1. Provide construction slope intercept stakes for horizontal and vertical alignment on each side of the road base on each cross section in the cross section sheets for requests received at least seventy-two (72) hours before the related work begins.
2. Provide construction reference stakes for subgrade at a minimum of fifty (50) foot intervals and maximum of one-hundred (100) foot intervals on tangents. Provide construction reference stakes for subgrade at twenty-five (25) foot intervals within vertical and horizontal curves. Provide a reference line stake at each location.
3. Provide construction reference stakes for top of crushed aggregate at a minimum of fifty (50) foot intervals and maximum of one-hundred (100) foot intervals on tangents. Provide construction reference stakes for top of crushed aggregate at twenty-five (25) foot intervals within vertical and horizontal curves. Provide a reference or centerline stake.

3.3 ENGINEERING SURVEYS TO BE PROVIDED BY THE CONTRACTOR

A. General

1. Locate, preserve and protect established construction reference stakes, benchmarks and control points.
2. Locate, preserve and protect property corners and section corner monuments. If moved or destroyed due to Contractor negligence, then replace in accordance with state requirements; some of which are referenced in the "Regulatory Requirements".
3. Provide additional construction staking as necessary to complete construction based on the construction reference stakes provided by the Engineer and the Drawings.
4. Before beginning with necessary construction staking, verify the information shown on the Drawings, in relation to the established construction reference stakes, bench marks, control points and property corners. Notify the Engineer of any discrepancies.
5. Remove construction reference stakes when directed by the Engineer.

B. Gravity Sewer Systems and Water Distribution Systems

1. Provide any intermediate construction reference points as required to verify installation at the line and grade established and locate appurtenant structures.
2. Check the line and grade with construction reference stakes at each pipe length.

C. New Road Construction

1. Provide additional construction reference stakes necessary to establish location and grade in accordance with the plans.

END OF SECTION

SECTION 32 90 10
NATIVE LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes requirements for the following:

1. Site Preparation.
2. Seeding.
3. Planting.
4. Maintenance.
5. Warranty.

1.2 REFERENCES

A. Native material references:

1. Black, M.R. and E.J. Judziewicz. 2009. Wildflowers of Wisconsin and the Great Lakes Region. University of Wisconsin Press, Madison, WI.
2. Curtis, J. 1959. Vegetation of Wisconsin. University of Wisconsin Press, Madison, WI.
3. Fassett, N.C. 1975. A Manual of Aquatic Plants. University of Wisconsin Press, Madison, WI.
4. Fassett, N.C. 1976. Spring Flora of Wisconsin. University of Wisconsin Press, Madison, WI.
5. Hip, A.L. 2008. Field Guide to Wisconsin Sedges – An Introduction to the Genus *Carex* (*Cyperaceae*). University of Wisconsin Press, Madison, WI.
6. Kelsey, H.P, and W.A. Dayton. Standardized Plant Names. American Joint Committee on Horticulture Nomenclature (current edition).

B. "State Specifications:" State of Wisconsin Department of Transportation, "Standard Specifications for Highway and Structure Construction – Sections 627,630 & 632," current edition, including any subsequent Supplemental Specifications.

C. Wisconsin Statutes and Wisconsin Administrative Code - Chapters ATCP 20 and 29.

D. American Association of Nurserymen, Inc. (AAN) Standard: American Standard for Nursery Stock (ANSI Z60.1).

E. Standard Methods of the Association of Official Agricultural Chemists.

1.3 SUBMITTALS

A. Submit the following prior to installation:

1. Information indicating vendor, species botanical and common names, gross weight, seed purity (% PLS), harvest date, and origin. Original nursery packaging for each species must be provided 14 days after seeding activities are completed.

2. Information indicating vendor, species botanical and common names, and pot size. Plant material shall comply with State of Wisconsin and federal laws with respect to inspection for plant diseases and insect infestation.
3. Inspection certificates and paperwork indicating the licensed nursery, species botanical and common names, and material size within 14 days of shipment.
4. Chemical Labels and Herbicide Application Record(s) within 30 days after application.
5. Photograph or detailed design of goose fencing system.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. CONTRACTOR or Subcontractor shall be a company specializing in native landscaping installation and be able to show three (3) successful projects.
2. Perform planting by personnel familiar with accepted native landscape planting procedures. Qualified foreman, representing CONTRACTOR or Subcontractor, shall be on-site during planting procedures. The individual shall be an ecologist with at least 3 years of native plant installation experience.
3. Submit qualifications. OWNER has sole authority to approve or disapprove native landscape contractor and/or subcontractor at OWNER's sole discretion.

B. Ability to Deliver:

1. Investigate sources of supply and confirm they can supply plants specified on plant list in sizes, variety, and quantity noted and specified before submitting bid. Failure to take this precaution will not relieve responsibility for furnishing and installing plant material in accordance with Contract requirements.
2. Substitutions may be permitted only upon submission of written proof that specified plant is not obtainable locally. Such substitution may be made upon written authorization by qualified botanist. Adjustments will be made at no additional cost to OWNER.
3. Provide seed and plant materials discussed below in quantity and size designated.

C. Inspection:

1. OWNER and ENGINEER may inspect plant material at nursery. Such inspection shall be in addition to inspection at job site.
2. Upon delivery and before seeding and/or planting, OWNER and ENGINEER may inspect seed packages and plants.
3. Inspection and approval is for quality, size, and variety only, and in no way impairs right of rejection for failure to meet other requirements during progress of Work.
4. CONTRACTOR shall be present during required inspections.

D. Source Quality Control.

1. Certification: Landscape materials shall be from stock inspected and certified by authorized governmental agencies. Material shall comply with governmental regulations prevailing at supply source and project.

2. Plant material shall comply with State of Wisconsin and federal laws with respect to inspection for plant diseases and insect infestation.
3. Size and grading standards of plant materials shall be in accordance with American Association of Nurserymen, Inc. (AAN) Standard: American Standard for Nursery Stock (ANSI Z60.1).

E. VHS and INVASIVE SPECIES

1. To the extent practicable, equipment and gear used on infested waters should not be used on other non-infested waters.
2. All equipment utilized for the project including but not limited to tracked equipment, barges, boats, silt/turbidity curtains, hoses and pumps shall be decontaminated for invasive and exotic viruses and species prior to and after use. The following steps shall be taken every time equipment is moved to avoid transporting invasive and exotic viruses and species:
 - a. Inspect and remove terrestrial and aquatic plants, seeds, animals and mud from equipment.
 - b. Drain all water from equipment that comes in contact with infested waters.
 - c. Dispose of aquatic plants and animals in the trash. Never release or transfer aquatic plants, animals or water from one water body to another.
 - d. Wash equipment with hot (>104 degrees F) and/or high pressure water **OR** allow your equipment to dry thoroughly for 5 days.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Delivery:

1. Seed:
 - a. Pack seeds for delivery in suitable bags in accordance with standard commercial practice.
 - b. Tag or label each bag as required by laws of State of Wisconsin and Federal Seed Act. Vendor's name shall show on or be attached to each bag together with statement signed by vendor indicating following:
 - i. Kind of seed contained.
 - ii. Percentage of purity and germination for native grass/sedge mix.
 - iii. Percentage of hard seed, if any.
 - iv. Statement conforming to laws of State of Wisconsin herein before mentioned showing percentage of weed seeds, if any.
2. Potted or Container Plants:
 - a. Provide container to hold rootstock protecting root mass and structure during delivery and handling.
 - b. Roots shall be developed and free from root rot.
 - c. Roots shall be kept cool and moist and out of sun and wind.
 - d. Bare root plants are unacceptable unless potted material is unavailable and substitution is accepted by OWNER and ENGINEER. Where bare root stock is used, it must be delivered and handled in such a way that roots are never allowed to dry out.

- e. Before wetland plant stock is transported, the top of the bulrush and other tall emergent shall be cut to leave an approximate 2-foot height. The intent is to promote rapid regrowth upon transplanting and to make them easier to transport.

B. Delivery:

1. Schedule shipping to minimize on-site storage of materials.
2. Plant Material: Take precautions in accordance with best trade practices and nursery recommendations to ensure arrival of material at Project Site in good condition and without injury. Cover plants to prevent freezing, drying, transit injury, or other exposure. During shipment, plants shall not be bent, stacked, or bound in manner that damages or destroys natural shape. Soil moisture shall be checked and material watered, if necessary.
3. Seed: Each species shall be delivered to the project site in the nursery's original, sealed packaging and labeled in accordance with Wisconsin State Law and the Federal Seed Act.
4. Notify ENGINEER 48 hours before delivery of seed and/or plant material.
5. Each shipment shall be accompanied by paperwork showing sizes and varieties included. Failure to notify ENGINEER in advance, in order to arrange proper scheduling, may result in loss of time or removal of plant material not installed as specified.
6. Protect seed against weather-related damage or other damages occurring during transit. Remove from site, seed that has become wet, moldy, or otherwise damaged and replace without extra cost to OWNER.
7. Fertilizer: Deliver fertilizer to site in original, unopened containers bearing weight, manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to state law.
8. Deliver topsoil in an unfrozen and non-muddy condition.

C. Temporary Storage:

1. Storage of Plant Material:
 - a. Set plants that are not to be planted within 4 hours, on ground and heal in with peat, soil, mulch or other approved media.
 - b. Protect roots of plant material from drying or other possible injury.
 - c. Water plants as necessary until planted.
 - d. Plants shall not remain unplanted for longer than 3 days.
 - e. Maintain plants in cold storage at approximately 30°F prior to being delivered to Site.
2. Keep seed cool and dry and protect against weather-related damage or other damages occurring during storage so their effectiveness will not be impaired. Do not store in direct contact with ground. Replace seed that has become wet, moldy, or otherwise damaged at CONTRACTOR'S expense.
3. Store fertilizer, humus, and spray materials in weatherproof storage areas and in such manner their effectiveness will not be impaired.

PART 2 - PRODUCTS

2.1 PLANT SPECIMENS

A. General:

1. Plant material shall be nursery grown or harvested unless otherwise specified or approved in writing by ENGINEER.
2. Unless specifically noted otherwise, plant material shall be of selected specimen quality, have normal habit of growth, and be sound, healthy, vigorous plants with well-developed root systems.
Plants shall be free of disease, insect pests, their eggs or larvae, and injuries.
3. Plant/Seed information:
 - a. See Paragraphs 2.01 E. & F. for seed mix and plant quantity requirements. It is the CONTRACTOR'S responsibility to ensure plants and/or seed are true to species and variety and conform to measurement specified in Paragraphs 2.01 E. & F., except plants larger than specified may be used if approved by ENGINEER. Use of such plants shall not result in increase in Contract Price.
 - b. Where plants larger than specified have been submitted in writing for approval and approved in writing by ENGINEER, CONTRACTOR shall assume responsibility of guarantee for plant in size as planted.
 - c. ENGINEER must approve any substitutions.

B. Cover Crop

1. Cover Crop Seed mix for all restored areas shall be as follows:

SPECIES	% MINIMUM PURITY	% MINIMUM GERMINATION
Annual Oats	98	90
Winter Wheat	95	90
Barnyard Grass(<i>Echinochloa crus-galli</i>)	95	90

2. Seeding a cover crop by itself between April 15th & August 15th shall be conducted using Annual Oats at a rate of 120 lbs/acre.
3. Seeding a cover crop by itself between August 15th & November 30th shall be conducted using Winter Wheat at a rate of 90 lbs/acre.
4. Native seeding conducted between April 15th & June 15th shall include a cover crop of Annual Oats at a rate of 20 lbs/acre.
5. Native seeding conducted between October 15th & November 30th shall include a cover crop of Winter Wheat at a rate of 10 lbs/acre.
6. Native wetland seeding shall also include a cover crop of Barnyard Grass at a rate of 1 lb/acre.

C. Native Seed

1. Seed stock shall be wild ecotype indigenous to Wisconsin or have natural origins within a 250 mile radius of the intended planting site.
2. Grasses classified as "Agricultural Grasses" shall be PLS as specified. Other seed shall be "clean" according to high quality industry standards.

3. Seed shall not be more than one year old at time of seeding.
4. Legumes shall be inoculated with proper rhizobia immediately prior to planting (six hours or less).

D. Mesic Prairie and Wet Meadow Seed Mix species and quantities:

Mesic Prairie Planting Zone

Common Name	Species Scientific Name	PLS Ounces Required Per Acre
<i>Forbs</i>		
Nodding Pink Onion	<i>Allium cernuum</i>	5.9
Butterfly Weed	<i>Asclepias tuberosa</i>	3.2
Heath Aster	<i>Aster ericoides</i>	0.3
Smooth Blue Aster	<i>Aster laevis</i>	2.4
New England Aster	<i>Aster novae-angliae</i>	2.0
Purple Prairie Clover	<i>Dalea purpurea</i>	4.5
Showy Tick Trefoil	<i>Desmodium canadense</i>	6.1
Pale Purple Coneflower	<i>Echinacea pallida</i>	12.8
Purple Coneflower*	<i>Echinacea purpurea</i>	6.7
Rattle Snake Master	<i>Eryngium yuccifolium</i>	11.9
Round Headed Bush Clover	<i>Lespedeza capitata</i>	2.8
Ox-eye	<i>Heliopsis helianthoides</i>	7.1
Prairie Blazing Star	<i>Liatris pycnostachya</i>	4.1
Wild Bergamot	<i>Monarda fistulosa</i>	5.7
Wild Quinine	<i>Parthenium integrifolium</i>	3.8
Smooth Penstemon*	<i>Penstemon digitalis</i>	0.9
Yellow coneflower	<i>Ratibida pinnata</i>	5.2
Black-eyed Susan	<i>Rudbeckia hirta</i>	1.9
Brown -eyed Susan	<i>Rudbeckia triloba</i>	3.3
Stiff Goldenrod	<i>Solidago rigida</i>	4.3
Common Spiderwort	<i>Tradescantia ohiensis</i>	5.6
Culver's Root	<i>Veronicastrum virginicum</i>	0.3
Golden Alexanders	<i>Zizia aurea</i>	10.1
<i>Grasses</i>		
Big Bluestem	<i>Andropogon gerardii</i>	36.4
Side Oats Grama	<i>Bouteloua curtipendula</i>	45.5
Prairie Sedge	<i>Carex bicknellii</i>	10.7
Brown Fox Sedge	<i>Carex vulpinoidea</i>	1.8
Canada Wild Rye	<i>Elymus canadensis</i>	35.0
Switch Grass	<i>Panicum virgatum</i>	19.5
Little Bluestem	<i>Schizachyrium scoparium</i>	12.1
Indian Grass	<i>Sorghastrum nutans</i>	22.8
TOTAL		294.7

*North American native species introduced into Wisconsin

Wet Meadow Planting Zone		
Common Name	Species Scientific Name	PLS Ounces Required Per Acre
<i>Forbs</i>		
Canada Anemone	<i>Anemone canadensis</i>	4.6
Marsh Milkweed	<i>Asclepias incarnata</i>	7.6
Calico Aster	<i>Aster lateriflorus</i>	1.3
New England Aster	<i>Aster novae-angliae</i>	3.3
Common Beggars Tick	<i>Bidens frondosa</i>	4.4
Joe Pye Weed	<i>Eupatorium maculatum</i>	4.6
Boneset	<i>Eupatorium perfoliatum</i>	4.1
Sneezeweed	<i>Helenium autumnale</i>	7.6
Northern Blue Flag	<i>Iris versicolor</i>	7.0
Marsh Blazingstar	<i>Liatris spicata</i>	6.6
Great Blue Lobelia	<i>Lobelia siphilitica</i>	1.5
Obedient Plant	<i>Physotegia virginiana</i>	3.3
Common Mountain Mint	<i>Pycnanthemum virginianum</i>	2.0
Riddell's Goldenrod	<i>Solidago riddellii</i>	3.9
Blue Vervain	<i>Verbena hastata</i>	1.6
Ironweed	<i>Vernonia fasciculata</i>	3.0
Culver's Root	<i>Veronicastrum virginicum</i>	1.4
Golden Alexander	<i>Zizia aurea</i>	9.9
<i>Grasses/Sedges/Rushes</i>		
Big Bluestem	<i>Andropogon gerardii</i>	35.7
Canada Bluejoint	<i>Calamagrostis canadensis</i>	2.0
Bebb's Sedge	<i>Carex bebbii</i>	10.5
Crested Oval Sedge	<i>Carex cristatella</i>	2.3
Awl-fruited Sedge	<i>Carex stipata</i>	6.6
Brown Fox Sedge	<i>Carex vulpinoidea</i>	3.6
Virginia Wild Rye	<i>Elymus virginicus</i>	31.8
Fowl Manna Grass	<i>Glyceria striata</i>	8.1
Rice Cut Grass	<i>Leersia oryzoides</i>	5.4
Switch Grass	<i>Panicum virgatum</i>	31.8
Green Bulrush	<i>Scirpus atrovirens</i>	1.9
Wool Grass	<i>Scirpus cyperinus</i>	1.3
TOTAL		218.7

2.2 PLANTING MATERIALS

A. Topsoil:

1. Obtained from natural well drained areas, and be fertile, friable soil, clean of undesirable materials such as plants, weeds, roots, stalks, stones, and other debris.
2. Existing topsoil shall be salvaged as it will be placed during restoration activities.

3. Acidity range of pH 5.0 and pH 7.0 and shall contain no less than 4% organic matter as determined by loss on ignition of moisture free samples dried at 100°C.

B. Soil Amendments:

1. Planting to be installed in native soils.

C. Water: Make arrangements for water used for planting with appropriate water utilities. Cost of water usage is responsibility of CONTRACTOR and is incidental to contract.

1. Obtain from fresh water sources and free from injurious chemical or other toxic substances harmful to plant life. No water, which is brackish, may be used.
2. Provide hose and equipment necessary for proper watering of plant material.

2.3 EROSION CONTROL MATERIALS

A. Mulch:

1. Straw:

- a. Oat or wheat straw shall be air-dried, free of noxious and invasive weed species including reed canary grass, and other objectionable foreign matter.
- b. Wet and/or moldy straw is not acceptable and shall be removed from the site by the CONTRACTOR.

B. Erosion Blanket & Stakes:

1. Materials shall be completely biodegradable (Class I, Urban, Type A) and included on WisDOT PAL
2. Anchoring devices shall be a minimum of 4" in length, be completely biodegradable (Urban) and included on WisDOT PAL

2.4 HERBICIDE, ADJUVANT & DYES

A. General:

1. Use only chemicals approved by and registered with the Environmental Protection Agency (EPA).
2. Chemicals used around water shall be aquatic approved.
3. The chemical or combination of chemicals shall be chosen based on the target species present and the desired treatment outcome.

PART 3 - SUPPLIERS

3.1 PLANT SUPPLIERS

- A.** At CONTRACTOR'S option, CONTRACTOR may contact the following companies for seed and plant supplies:

JFNew
708 Roosevelt Rd
Walkerton, IN 46574
(574) 586-2412

Taylor Creek Restoration Nursery
17921 Smith Road
PO Box 256
Brodhead, WI 53520
(608) 897-8641

Marshland Transplant Aquatic Nursery
116 East Huron Street
Berlin, WI 54923-2050
(800) AQUATIC

J&J Transplant Aquatic Nursery, LLC
PO Box 227
Wild Rose, WI 54984
(800) 622-5055

Prairie Nursery, Inc.
PO Box 306
Westfield, WI 53964
(800) 476-9453

Prairie Moon Nursery
32115 Prairie Lane
Winona, MN 55987
(866) 417-8156

Dragonfly Gardens
491 State Highway 46
Amery, WI 54001
(715) 268-7660

Hickory Road Gardens
2041 Hickory Road
Mosinee, WI 54455
(715) 693-6446

Stone Silo Prairie Garden
2325 Oak Ridge Circle
De Pere, WI 54115
(920) 336-1662

Agrecol, LLC
10101 North Casey Road
Evansville, WI 53536
(608) 223-3571

3.02 HERBICIDE SUPPLIERS

- A. At CONTRACTOR'S option, CONTRACTOR may contact following companies for chemical supplies:

Crop Production Services
N125 County Highway C
DeForest, WI 53532
(608) 846-1100

Red River Specialties, Inc
7545 Haygood Road
Shreveport, LA 71107
(317) 440-7103

PART 4 - EXECUTION

4.1 PROJECT/SITE CONDITIONS

- A. Inspection:
1. Prior to beginning Work, CONTRACTOR shall examine and verify acceptability of Project site for conditions under which seeding and planting are to be performed. Do not proceed with Work until satisfactory conditions are present.

2. Starting Work constitutes acceptance of conditions under which Work is to be performed. After such acceptances, CONTRACTOR shall be responsible for correcting unsatisfactory and defective Work resulting from such unsatisfactory conditions.
3. When landscape work is executed in conjunction with construction of other work, coordinate schedule to permit execution of landscape work.

4.2 SEEDING

A. Seedbed Preparation

1. Prior to seeding a cover crop or native species, the planting area shall be prepared through the following sequence:
 - a. Topsoil shall be worked with a pulverizer, tiller, disc, or harrow to a depth of 1-2". The topsoil shall be free of heavy clay, refuse, stumps, large roots, rocks over 2 inches in diameter, weeds, or other extraneous material which would be detrimental to good seed-to-soil contact, and therefore seed establishment.
 - b. The surface shall then be dragged or raked to provide a smooth, fine textured soil throughout the planting area. All debris (e.g., wood, rocks, garbage, etc.) shall be removed during final seedbed preparation.
 - c. A temporary cover crop shall then be seeded. The species chosen and the rate utilized will follow the requirements per Paragraph 2.01 B. Seed shall be sown with a broadcast seeder and follow those guidelines found in Paragraph 4.02 C. Straw mulch may be applied to assist with cover crop establishment.
 - d. Once the cover crop has grown to a height of 6-8", a series of three (3) or four (4) herbicide applications will be conducted throughout the growing season(s). A combination of Glyphosate and 2,4-D are to be utilized for each application and shall be applied at the rates recommended on the label for the vegetation species present. The first application is expected to be completed in late May to early June. The second and third applications are expected to be undertaken in late July and mid-September – prior to the first hard freeze. The schedule for herbicide applications will be flexible to accommodate the weather and existing growing conditions; however, the Contractor must communicate with the Owner and the Engineer prior to conducting any application. Incomplete, untimely or unsuccessful herbicide treatments may result in additional treatment requirements to be conducted at the Contractor's expense.
 - e. Following the last herbicide application and prior to sowing the native seed the soil shall be lightly worked to a depth of ¼" – ½" in depth with a disc or harrow. If the soil is too light and fluffy, the area shall be cultipacked to provide a firmer seedbed prior to seeding.

B. Installation and Procedures:

1. Seeding shall occur immediately after seedbed preparation. Restored areas shall be seeded with the native seed mixes at the PLS ounces per acre rate indicated in Paragraph 2.01 E. Seeding shall be conducted within the designated communities (Drawings) between October 15th and November 30th.
2. All native seed species shall be mixed on-site prior to installation.

3. If the communities are hand sown, the seed shall be mixed with a carrier (e.g., sawdust, vermiculite, moist sand, etc.) to ensure even seed distribution. If a broadcast seeder is utilized, it shall be properly calibrated to ensure an even seed distribution is achieved within the planting area.
4. After the seed has been installed, the area shall be rolled to ensure good seed to soil contact.
5. Once seed installation is complete, erosion blanket shall be placed in those areas designated on the Drawings. Mulch, if applied with the cover crop, and erosion blanket installation shall follow those requirements outlined in 4.05 below.

C. Seeding shall not be permitted during the following conditions unless otherwise approved:

1. Saturated soil conditions.
2. Frozen soil conditions.
3. Wind speeds >15 miles per hour.
4. Temperatures less than 32 degrees Fahrenheit.
5. Temperatures greater than 90 degrees Fahrenheit.

4.5 EROSION CONTROL MATERIALS

A. Mulch

1. General:
 - a. Place clean, straw mulch on the cover crop seeding within 72 hours after seeding, if desired.
 - b. Do not apply during high winds.
 - c. Place loosely enough to allow some sunlight penetration and air circulation, but thickly enough to shade the ground, conserve moisture and reduce erosion.
2. The CONTRACTOR shall perform mulching in accordance with "Method C" as explained in the "State Specifications:" State of Wisconsin Department of Transportation, "Standard Specifications for Highway and Structure Construction – Sections 627" current edition.

B. Erosion Blanket & Stakes

1. General:
 - a. Install Class I, Urban, Type A erosion blanket and biodegradable stakes on the slopes of the native seeding per Sheets 6 and 7 within 72 hours after seeding.
 - b. Do not apply during high winds.
2. The CONTRACTOR shall install the erosion blanket and stakes per manufacturer's recommendations.

4.6 CLEAN UP AND REPAIR

A. Remove excess and waste material daily.

B. Upon completion of planting, remove excess soil, stones, and debris and dispose of off-site.

- C. CONTRACTOR shall be liable for any damage caused to surrounding properties as a result of negligence when conducting landscape installation. Damage to existing landscape, pavements, or other site features as result of Work shall be repaired to its original condition.

4.7 PRELIMINARY ACCEPTANCE

- A. Notify ENGINEER at conclusion of planting and seeding operations so OWNER and ENGINEER can determine completion by field inspection.
- B. Completion requires:
 - 1. Seed and plant material conforms to Contract Documents with respect to quantity, quality, size, species, and location, except those items accepted or revised in the field by OWNER and ENGINEER.
 - 2. Plant material shall be established, upright, green (i.e., healthy condition), and exist in the locations as determined by the OWNER and ENGINEER.

4.8 MAINTENANCE DURING WARRANTY PERIOD

- A. General:
 - 1. CONTRACTOR shall provide maintenance during the two-year warranty period in accordance with the submitted and approved Maintenance Plan.
 - 2. Repair work necessitated by CONTRACTOR'S operations, land disturbance outside designated work areas, CONTRACTOR'S failure to perform adequate maintenance or due to CONTRACTOR'S negligence shall be performed without cost to OWNER.
 - 3. Any soil erosion resulting from inadequate cover crop or permanent seed establishment shall be corrected at the CONTRACTOR'S expense.
- B. Protection:
 - 1. CONTRACTOR is liable for damage to planted areas caused by deicing compounds, toxic substances, fertilizers, pesticides, and other materials applied by CONTRACTOR. CONTRACTOR is not liable for materials applied by others or damage caused by vandalism or natural causes.
 - 2. Protect landscape Work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection until completion and acceptance.
 - 3. Protect existing property and improvements within these sites and those adjacent to OWNER'S property.

4.9 WARRANTY

- A. During the 1-year warranty period CONTRACTOR shall re-seed areas with poor germination to meet the following criteria:
 - 1. Seeding success criteria – An area will be considered satisfactory if it meet the following:
 - a. A minimum of 75% total native vegetative coverage.

- b. No bare areas larger than 10 square feet.
- c. Vegetation is in healthy condition.
- 2. 90% of the installed plants are living and healthy.

B Replacement and Damages:

- 1. On or about expiration of the 1 warranty periods, follow-up inspections will be made to determine replacements or corrections required to be made by CONTRACTOR in accordance with provisions of these Specifications and the Maintenance Plan. ENGINEER will document findings in field report, and forward copies to CONTRACTOR. Items identified for replacement will be tagged during inspection with plastic flagging. Decision of OWNER and ENGINEER for required replacements is final and binding upon CONTRACTOR.
- 2. CONTRACTOR is responsible for repairing damage to property caused by defective workmanship and materials.

C. Exclusions:

- 1. CONTRACTOR is not liable for replacement cost of seeds damaged by extreme weather conditions. CONTRACTOR is not liable for plants not installed by CONTRACTOR under CONTRACTOR'S supervision, by relocation or removal by others, by acts of God, or by vandalism, and losses because of curtailment of water by local authorities.

4.10 REPLACEMENTS

A. General Procedure

- 1. Reseeding shall be performed at the CONTRACTOR'S expense and in conformance with the original seeding and planting specifications unless they are modified by the ENGINEER.
- 2. Seed shall be of the same species, quality, and size as originally installed, or with substitutes pre-approved in writing by the ENGINEER.
- 3. Reseeding activities shall be conducted during the first available period, as determined by the OWNER and ENGINEER.
- 4. Dispose of dead plants off-site.
- 5. Restore areas damaged by replacement operations to original condition.
- 6. Notify OWNER and ENGINEER at conclusion of replacement program
- 7. OWNER and ENGINEER will conduct inspection of replacements for determining final acceptance.

4.11 FINAL ACCEPTANCE

A. Procedure

- 1. Upon completion of replacement program, CONTRACTOR shall notify OWNER and ENGINEER.
- 2. OWNER and ENGINEER will inspect the site to determine acceptability of required replacements.
- 3. If acceptable and the warranty criteria outlined in 4.09.A.1.&2. are met, OWNER and ENGINEER shall notify CONTRACTOR, in writing, of final acceptance of Work.

4. After acceptance, OWNER will be responsible for all future replacements and maintenance.

END OF SECTION

SECTION 32 92 00 SP

TURF AND GRASSES – NO MOW

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Additions to the City of De Pere 2020 Standard Specifications for the use of No Mow grass.

PART 2 – PRODUCTS

2.1 SEED MIXTURE

- A. No-Mow Fescue Seed Mix:** Provide fresh, clean, new-crop seed complying with tolerance for priority and germination established by Official Seed analysis of North America. Provide seed mixture composed of species, at proportions and percentages of purity and germination. Seed blend shall be No Mow Lawn Mix with Annual Rye for erosion control, as distributed by Prairie Nursery, Westfield, WI; Telephone: 800-476-9453 or approved equal.

PART 3 – EXECUTION

3.1 NO-MOW FESCUE SEEDING

- A.** Apply seed by use of approved “to till” drill type seed planter. Planting equipment shall deposit seed mix a minimum of 1/4-inch into soil surface and shall keep materials in an agitated state and be so designed to insert seed uniformly at specified rate.
- B.** Install 50 percent of seed on the first pass in north-south direction and complete operations in an east-west direction to ensure equal distribution of seed.
- C. Mulching and Erosion Control:** Uniformly cover entire seeded area with erosion control mat or a loose depth of chopped, weed-free straw mulch per the following after installing seed:
1. For No-Mow Fescue seeding areas, use one (1) inch maximum of straw mulch.
- D.** Chop and blow mulch onto the area. On steep slopes and windy sites, hold the mulch in place by staking down a jute mesh netting on top or apply a light erosion control blanket instead of straw mulch. Erosion control blanket or mat shall be installed on slopes of 30 percent (3:1) or greater and other locations where indicated on Drawings.
- E. Mulching Notes:**
1. Unless directed otherwise, place mulch on specified area within two (2) days after completing the seeding.

2. Do not perform mulching during periods of excessively high winds that might preclude proper mulch placement.
 3. Place mulch loosely or open enough to allow some sunlight to penetrate and air to slowly circulate, but thick enough to shade the ground, conserve soil moisture, and prevent or reduce erosion.
 4. Maintain the mulched areas and repair all areas damaged by wind, erosion, traffic, fire or other causes before final or partial acceptance of the work.
- F. Planting equipment shall be so designed that when solution is deposited over an area, resulting deposits of seed are equal in quantity to required rates.
- G. Completely flush and clean planting machinery each day before seeding is to be started and thoroughly flush residues after completion of every five (5) acres.
- H. Moisten prepared topsoil surface immediately prior to seeding.
- I. Prepare seed mixture accurately and indoors at percentages specified, or provide quality seed mixture of blend specified earlier in this Section, and construction details.

END OF SECTION

APPENDIX A

GEOTECHNICAL ENGINEERING REPORT
DE PERE PROJECT 20-01
BY ECS MIDWEST, LLC



ECS Midwest, LLC

Geotechnical Engineering Report

De Pere Project 20-01

Various Streets

De Pere, Brown County, Wisconsin

ECS Project Number 59:1669-A

November 22, 2019





ECS MIDWEST, LLC

Geotechnical • Construction Materials • Environmental • Facilities

"Setting the Standard for Service"

November 22, 2019

Mr. Eric Rakers
City of De Pere
925 South Sixth Street
De Pere, WI 54115
Email: erakers@mail.de-pere.org

ECS Project No. 59:1669-A

Reference: Geotechnical Engineering Report
De Pere Project 20-01
Various Streets
De Pere, Brown County, Wisconsin

Mr. Rakers:

ECS Midwest, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. We performed our services in general accordance with our Proposal No. 59:1290, dated December 20, 2018. This report presents our understanding of the geotechnical aspects of the project, the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to the City of De Pere on this project. We would appreciate the opportunity to continue our services during the remainder of design and provide our services during construction to verify the assumptions of subsurface conditions made for this report. Please contact us should you have any questions concerning the information contained in this report, or if we can be of further assistance to you.

Respectfully submitted,

ECS Midwest, LLC

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Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram

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- Test Boring Log 1 through 7
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- Important Information about This Geotechnical-Engineering Report

EXECUTIVE SUMMARY

The main findings of the exploration are briefly summarized below. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical subsurface exploration performed at the sites included seven (7) standard penetration test borings. ECS drilled the borings to a depth of approximately 5 to 20 feet below the existing grade for a total of 65 feet.
- The borings generally encountered a topsoil or asphalt pavement section at the surface and then existing fill strata overlying a combination of glacial till and lacustrine soils, which extended to the termination depth of the borings. However, Boring 1, 5 and 7 did not contain existing fill strata. The encountered glacial till consisted of medium stiff to stiff lean clay (CL) and sandy lean clay (CL) soils, while the lacustrine soil consisted of medium stiff to very stiff silty clay (CL/ML), fat clay (CH), and lean clay (CL). Further, the existing FILL consisted of medium stiff to stiff organic silt (OL), lean clay (CL), and sandy lean clay (CL) soils.
- The drill crew observed the boreholes for a groundwater level during drilling and at the completion of drilling operations. However, none of the borings contained a groundwater level.
- ECS recommends the removal of all existing fill and organic soils from below utility structures and pipes.
- ECS anticipates Excavation Below Subgrade (EBS) will be performed where the encountered subgrade soils contain more than 5 percent organic content or proof-rolling operations indicate rutting or deflections in excess of 1 inch. Consideration should be given to providing EBS for frost concerns where the exposed subgrade contains highly frost susceptible soil (e.g. silt or silty clay).
- In our opinion, initial attempts to control groundwater seepage into excavations could include a series of sump pits and pumps. However, if the groundwater level cannot be controlled with a series of sump pumps, or where excavations extend below the static groundwater level, then dewatering efforts will require a more substantial system (such as temporary well point system).

1.0 INTRODUCTION

1.1 GENERAL

ECS prepared this report for the purpose of providing the results of our subsurface exploration and laboratory testing, site characterization, engineering analysis, and geotechnical opinions and recommendations concerning the potential suitability of the subject site for the design and construction of utility infrastructure, pavements, and storm water management systems. The report also includes our recommendations concerning geotechnical subgrade preparation, fill placement, dewatering and construction considerations.

1.2 SCOPE OF SERVICES

ECS performed seven (7) standard penetration test borings at the approximate locations shown on the Soil Bore Location maps dated September 2019, which were prepared by the City of De Pere. We also implemented a limited laboratory-testing program to characterize the physical and engineering properties of the subsurface soils.

This report discusses our exploration and testing procedures, presents our findings and evaluations, and includes the following.

- A brief description of our field and laboratory test procedures and results.
- A description of the observed surface topographical features and site conditions.
- A description of area and site geologic conditions.
- A description of the interpreted subsurface soil stratigraphy with pertinent available physical properties.
- Copies of our records of subsurface exploration (test boring logs).
- Recommendations for design of pavements (rigid and flexible) including subgrade preparation, soil parameters for WisDOT pavement design and pavement drainage.
- Recommendations for storm water infiltration.
- Utility construction considerations.
- Recommendations for site preparation and construction of engineered fills, including an evaluation of on-site soils for use as compacted fills, and delineation of potentially unsuitable soils.
- Evaluation and recommendations relative to groundwater control.

1.3 AUTHORIZATION

ECS provided services in accordance with our Proposal No. 59:1290, (dated December 20, 2018) and the "Agreement for Consulting Services – City of De Pere" authorized by Mr. Michael Walsh, Mayor and Ms. Shana Ledvina, Clerk-Treasurer (dated February 18, 2019), and includes the Terms and Conditions of Service outlined in the Proposal and Agreement.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project sites are located in the City of De Pere, Brown County, Wisconsin. Specifically, the project sites are located at the following locations:

- East Matthew Drive Storm Ponds (Boring 1 and 2) located at the southeast corner of the intersection of East Matthew Drive and Suburban Drive.
- Cass Street (Boring 3) at the west cul de sac of the street.
- Alley (Boring 4) north of George Street, between Ontario Street and Winnebago Street.
- South 8th Street (Boring 5) between Main Avenue and Reid Street.
- Reid Street (Boring 6) between South 8th Street and Allard Street.
- Patriot Way (Boring 7) at its intersection with Patrick Henry Avenue.

The site location is shown in Figure 2.1.1 and on the Site Location Diagram in Appendix A of this report.



Figure 2.1.1 Site Locations (approximately outlined in red)

2.2 PAST SITE HISTORY/USES

ECS reviewed aerial photographs of the subject site dated 1992, 2005, 2006, 2008, 2010, 2011, 2015, 2017 and 2018. Based on our review of the aerial photographs, the site use at the East Matthew Drive Storm Ponds appeared to consist of vacant land used for storm water management. Further, the site use at Cass Street, Alley, South 8th Street, Reid Street, and Patriot Way appeared to consist of asphalt paved urban street sections. These site uses appeared to have remained relatively unchanged since at least 1992.

2.3 CURRENT SITE CONDITIONS

The site of the proposed construction consisted of groomed lawn and existing storm water pond at the East Matthew Drive Storm Ponds and an asphalt paved urban street section at Cass Street, Alley, South 8th Street, Reid Street, and Patriot Way at the time of drilling. The ground surface generally consisted of nearly level to gently sloping soils across the sites. However, ECS did not determine the surface elevation at the boring locations.

2.4 PROPOSED CONSTRUCTION

ECS understands the proposed project will include reconstruction of existing municipal utilities, roadway pavements, and storm water management devices. Further, we anticipate the proposed pavements will consist of a concrete or bituminous pavement section, and the new vertical and horizontal alignments will approximately match the existing alignments (less than 2 feet of elevation change). The planned traffic volume was not provided to us at the time of this report. ***If the design changes, please notify ECS immediately so that we evaluate our recommendations and verify the recommendations are appropriate for the proposed construction.***

Where the borings encounter subsurface conditions that might be detrimental to the support of the proposed construction, ECS has assumed the owner will have an acceptable risk level if the detrimental material remains in place. With this in mind, this report assumes the owner would only be willing to accept a low risk for utility settlement in excess of 1 inch. In addition, we assume the owner would be willing to accept a moderate risk for reduced pavement performance. ***If these assumptions concerning the owner's acceptable risk level are incorrect, we should be immediately contacted so we can review our recommendations in light of the changed acceptable risk level.***

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

ECS used the boring depths and locations provided by Mr. Bob Krzewina of the City of De Pere, to characterize the project site in general geotechnical and geological terms, and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations.

3.1.1 Test Borings

ECS drilled seven (7) standard penetration test borings within the limits of the proposed construction. The drill crew advanced four (4) of the borings to a depth of approximately 5 feet, one (1) to 10 feet, one (1) to 15 feet, and one (1) to 20 feet below the existing grade. We performed the borings with a truck vehicle mounted rotary drill rig utilizing continuous flight hollow stem augers (HSA).

City of De Pere personnel staked the test boring locations in the field. The approximate as-drilled test boring locations are shown on the Boring Location Diagram in Appendix A of this report. Please note, the drill crew offset Boring 1, 2, 3 and 5 from the marked locations because of conflicts with existing utilities or drill rig access concerns. The distance and direction of the offsets are noted on the boring logs in Appendix B of this report. However, our scope did not include obtaining the surface elevation at the boring locations.

The drill crew conducted standard penetration tests (SPTs) in the boreholes at regular intervals in general accordance with American Society for Testing Materials (ASTM) D1586 and American Association of State Highway and Transportation Officials (AASHTO) T206. The obtained standard penetration resistances provide a general indication of soil relative density and consistency. The drill crew chief visually and manually classified the samples in the field using ASTM D2488 as a guide. Field personnel then collected representative soil samples and returned them to the laboratory for further observation and verification of the field classification.

Some borehole backfill settlement or expansion can and will occur over time. Monitoring the boreholes after the initial drilling activities is not within our scope. Settlement or expansion of the borehole backfill can create a hazard and should be carefully monitored by the client.

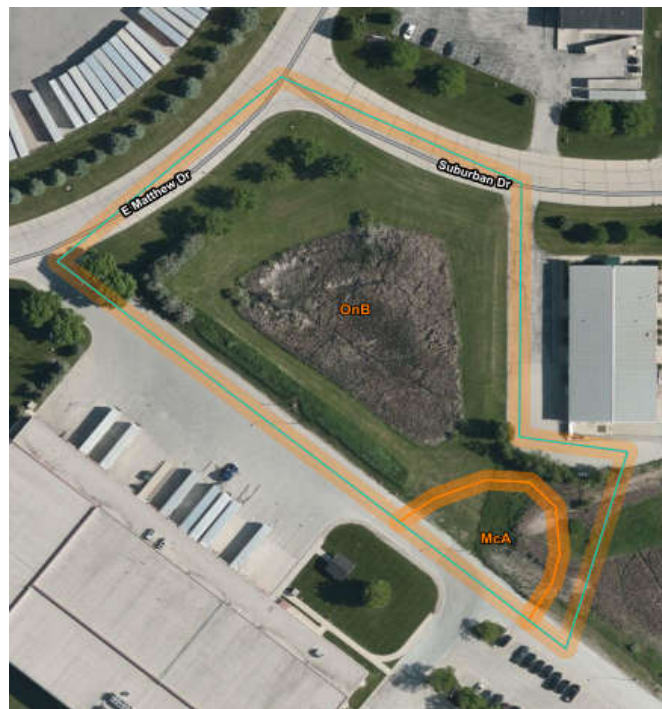
3.2 SOIL SURVEY MAPPING

According to the Soil Survey from the USDA - Natural Resources Conservation Service (websoilsurvey.nrcs.usda.gov), which provides soil information to a shallow depth (generally less than 5 feet), the site soils are generally mapped as Fill land (Fd), Manawa silty clay loam (McA), Oshkosh sandy loam (OmB), and Oshkosh silt loam (OnB). These soil types are described with the following properties.

- Fill land (Fd) – Landforms consisting of human transported materials of various soil types. These soils are generally well drained and have a moderate potential for frost action. This soil type is mapped in the area of Boring 3.

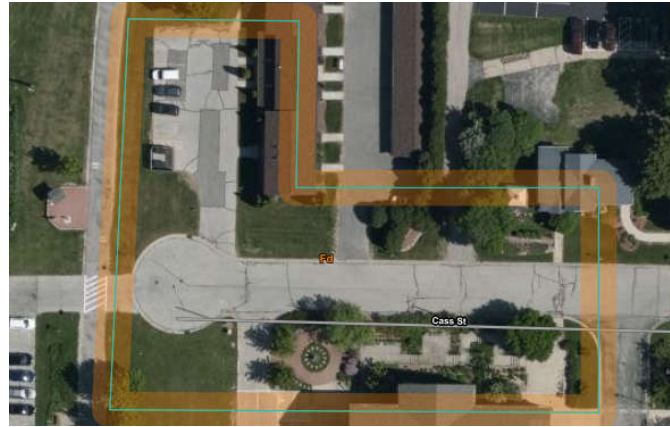
- Manawa silty clay loam (McA) – Landforms consisting of drainageways with clayey till, and/or calcareous, dense clayey till. These soils are generally somewhat poorly drained, classified as being in Hydrologic Soil Group D, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 2.
- Oshkosh sandy loam (OmB) – Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 5 and 6.
- Oshkosh silt loam (OnB) – Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate potential for frost action. This soil type is mapped in the area of Boring 1, 4 and 7.

Soil mapping of the site vicinity is presented in the following figures.



(Source: USDA - Natural Resources Conservation Service)

Figure 3.2.1 Soil Survey Information (East Matthew Drive Storm Ponds)



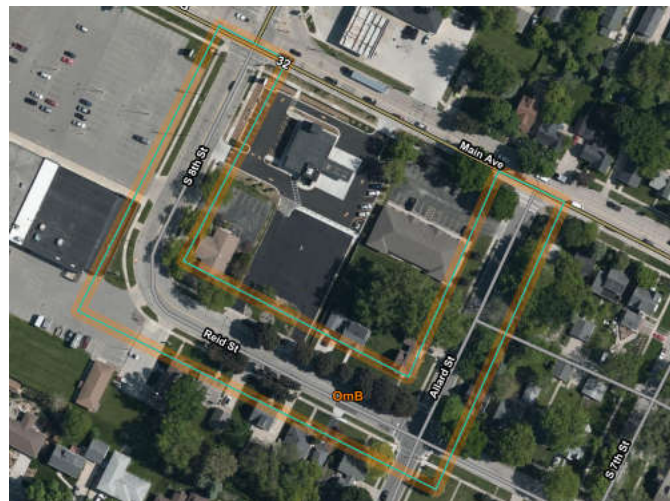
(Source: USDA - Natural Resources Conservation Service)

Figure 3.2.2 Soil Survey Information (Cass Street)



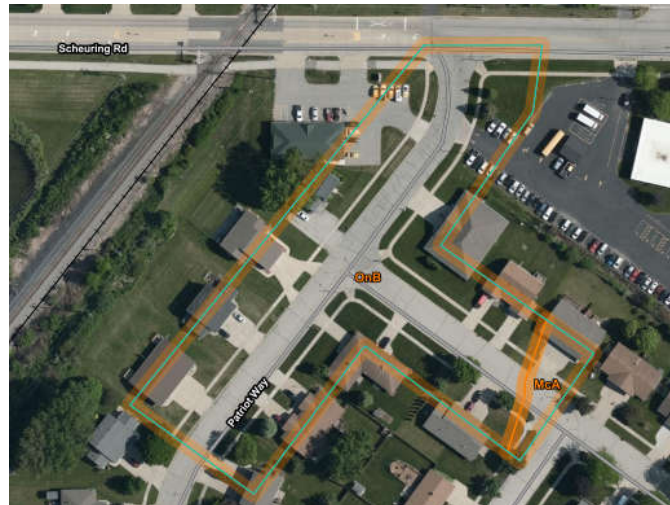
(Source: USDA - Natural Resources Conservation Service)

Figure 3.2.3 Soil Survey Information (Alley)



(Source: USDA - Natural Resources Conservation Service)

Figure 3.2.4 Soil Survey Information (South 8th Street and Reid Street)



(Source: USDA - Natural Resources Conservation Service)

Figure 3.2.5 Soil Survey Information (Patriot Way)

3.3 SUBSURFACE CHARACTERIZATION

The encountered subsurface conditions in the borings appeared to closely match published geological mapping, with the exception of the existing fill in Boring 2, 4 and 6. Table 3.3.1 of this report provides a generalized characterization of the soil strata encountered at the boring locations during our subsurface exploration. For subsurface information at a specific test boring location, refer to the boring logs in Appendix B of this report.

Table 3.3.1 Subsurface Stratigraphy

Approximate Depth Range (feet)	Strata	Description	SPT ⁽¹⁾ N-value Range (bpf)	Unconfined Compressive Strength ⁽²⁾ (tsf)
Surface	--	Approximately 2 to 3 inch thick topsoil layer at Boring 1 through 3, and 12 to 17 inch thick asphalt pavement section at Boring 4 through 7.	N/A	N/A
2 - 4	I	FILL: medium stiff to stiff organic silt (OL), lean clay (CL), and sandy lean clay (CL) (Boring 2, 3, 4 and 6)	6 - 13	N/A
5 - 20 (End of Boring)	II	Glacial Till and/or Lacustrine: medium stiff to very stiff silty clay (CL/ML), sandy lean clay (CL), lean clay (CL) and fat clay (CH)	6 - 23	1.0 - 5.2

Notes: (1) Standard Penetration Test.
(2) Based on calibrated hand penetrometer test

Where the drill crew used discontinuous material sampling intervals at the test borings, ECS inferred conditions between sample intervals. The soil stratification shown on the boring logs represents the interpreted soil conditions at the actual boring locations. Variations in the stratification can occur between sample intervals and boring locations. The subsurface conditions at other times and locations on the site may differ from those found at the boring locations. If different site conditions are encountered during construction, ECS should be contacted to review our recommendations relative to the new information.

The soil classifications noted on the boring logs may not be representative of the entire soil matrix because of the limitations of the split-spoon sampler, which has a 1 $\frac{3}{8}$ -inch inside diameter. Materials larger than the 1 $\frac{3}{8}$ -inch inside diameter of the split-spoon sampler cannot be collected and observed directly. Where possible, the drill crew noted on the boring logs the estimated depth of larger diameter materials, such as cobbles, based on things such as changes in the observed drilling resistance and auger cuttings.

3.4 GROUNDWATER OBSERVATIONS

The drill crew observed the bore holes for a measureable groundwater level during and at the completion of drilling operations. However, none of the borings contained a groundwater level.

The borings generally encountered soils with poor draining characteristics. With this in mind, in our opinion, the lack of an observed groundwater level in the borings may not necessarily indicate a static groundwater level below the termination depth of the boring at the time of this exploration program. In addition, variations in the long-term water table elevation may occur as a result of seasonal variations in precipitation, evaporation, surface water runoff, lateral drainage conditions, construction activities, and other factors. The time of year and the weather history during the advancement of the borings should be considered when estimating groundwater levels at other points in time.

4.0 LABORATORY TESTING

The following paragraphs briefly describe the results of the completed laboratory testing program. We performed classification and index property tests on representative soil samples obtained from the test borings to aid classification of the soils, and to help estimate engineering properties.

A geotechnical engineer visually classified each collected soil sample from the test borings on the basis of texture and plasticity using the Unified Soil Classification System (USCS) and ASTM D2488 (AASHTO T206), Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) as a general guideline. After classification, the geotechnical engineer grouped the various soil types into the major zones noted on the test boring logs in Appendix B of this report. The group symbols for each soil type are indicated in parentheses before the soil descriptions on the test boring logs. The bracketed text noted on the boring logs after the group symbols indicates the AASHTO Classification. The stratification lines designating the interfaces between earth materials on the test boring logs are approximate; in-situ, the transitions may be gradual.

The soils retained from Boring 1 and 2 were also classified using the U.S. Department of Agriculture (USDA) Soil Classification System. The USDA classifications can be found on the "Soil and Site Evaluation – Storm" form included in Appendix B of this report.

ECS performed calibrated hand penetrometer tests (Q_p) on select cohesive soil samples. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 6.0 tons per square foot (tsf), by measuring the resistance of a soil sample to penetration by a small, calibrated, spring-loaded cylinder. The hand penetrometer test results can be found on the boring logs.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

5.0 DESIGN RECOMMENDATIONS

5.1 PAVEMENT DESIGN CONSIDERATIONS

Subgrade Characteristics: The pavement design recommendations assume the subgrade consists of suitable materials evaluated by ECS, and the subgrade is prepared as recommended in the Subgrade Preparation and Earthwork Operations sections of this report.

Based on the results of our soil borings, ECS recommends the use of the pavement subgrade design parameters noted in Table 5.1.1 of this report, which provides values for the first suitable soil strata encountered in the borings. ECS obtained the values for the Soil Support Value and Design Group Index from the WisDOT Pavement Design Manual and Frost Index values from the frost susceptibility classifications according to the U.S. Army Corps of Engineer's criteria. We estimated the Subgrade and Resilient Modulus values based on historical testing of similar soil.

For grading work and drainage design, shrinkage should be in the range of 20 to 35 percent for the encountered soils. These values correlate to expansion factors of 25 to 54 percent. For design purposes we recommend using an average shrinkage factor of 25 percent (33 percent expansion factor).

Table 5.1.1 Recommended Pavement Subgrade Design Parameters^{1, 2}

Boring Number	Location ³	Soil Classification		Subgrade Reaction Modulus, K (psi/in)	Resilient Modulus, M _R (psi)	Frost Index	Soil Support Value	Design Group Index
		USCS	AASHTO					
1	East Matthew Storm Pond	CH	A-7-6	100	2,600	F-3	3.8	15
2	East Matthew Storm Pond	CL [FILL] ⁴	A-6	125	2,800	F-3	4.2	12
3	Cass Street	CL	A-6	150	3,000	F-3	4.2	12
4	Alley	CL [FILL] ⁴	A-6	125	2,800	F-3	4.2	12
5	South 8 th Street	CL	A-6	150	3,000	F-3	4.2	12
6	Reid Street	CL	A-6	150	3,000	F-3	4.2	12
7	Patriot Way	CL	A-6	150	3,000	F-3	4.2	12

- Notes:
1. All design parameters are estimates only, and are based on historical data for similar soil types. If more accurate values are required, additional testing should be performed.
 2. Design parameters are for the first suitable soil strata below the proposed pavement elevation encountered in the borings. If more than 2 feet of sub-base fill material is placed, the characteristics of the fill will govern the pavement design.
 3. General boring locations determined by City of De Pere personnel.
 4. Denotes existing fill which, understanding the risks noted in the Subgrade Preparation section of this report, is suitable to support the proposed pavement section.

Areas of subgrade stabilization and/or undercut may be needed because of the potentially variable support of the existing fill, especially if the subgrade is subjected to construction traffic disturbance or if construction is during adverse weather conditions. A reduced service life, increased pavement maintenance and associated costs should be expected because of the existing fill subgrade. In addition, consideration should be given to providing Excavation Below Subgrade (EBS) for frost

concerns in areas where the exposed subgrade contains highly frost susceptible soil (e.g. silt or silty clay).

The ends of over-excavated areas should be sloped across a minimum length of 10 feet to reduce the potential abrupt changes in the pavement support characteristics that could lead to future pavement distress. Furthermore, in areas requiring over-excavation for detrimental frost concerns and in trenches for utilities, ECS recommends constructing transition zones, which are wedges of backfilled soil used to mask the distinct difference between the native soils and the backfilled area (such as trenches for utilities). The transition zone should start at the trench walls, and a depth of 3 feet below the finished pavement, and rise at a slope of 1 vertical to 3 horizontal as it extends perpendicular to the trench. However, transition zones would not be necessary where EBS areas are backfilled with soils similar to the native soils, or where the native soils contain less than 30 percent material passing the #200 sieve.

Prior to placing the aggregate base material, the pavement subgrade should be prepared as recommended within this report. Crushed aggregate base course utilized below pavements should meet Section 305 of the WisDOT Standard Specifications for Road and Bridge Construction and the gradation should meet the "1½ inch" specification. The crushed aggregate base course should be compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor method. As an alternative, a dense graded base meeting the "3 inch" specification can be used for the lower 8 inches of the base course layer to bridge over softer subgrade soils.

The aggregate used in the bituminous mixture should meet the 19.0 mm gradation for the lower pavement layer and the 12.5 mm gradation for the upper pavement layer as specified in Section 460 of the WisDOT Standard Specifications for Road and Bridge Construction. The asphalt pavement should be compacted to a minimum of 93 percent of the theoretical density value.

Adequate construction joints, contraction joints and isolation joints should be provided in the areas of rigid pavement to reduce the impacts of cracking and shrinkage. Please refer to ACI 325.12R-02 *Guide for Design of Jointed Concrete Pavements for Streets and Local Roads (Reapproved 2013)*. The Guide recommends an appropriate spacing strategy for the anticipated loads and pavement thickness. It has been our experience that joint spacing closer to the minimum values results in a pavement with less cracking and better long-term performance.

Weather Restrictions: In this region, asphalt plants may close during the months of December through March, and/or April if particularly cold weather conditions prevail. However, this can change based on year to year temperature fluctuations. Daily temperatures from December to March will often stay below 40°F, limiting the days that asphalt placement can occur.

Pavement Drainage: An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. The final pavement surface should be shaped or crowned to properly direct surface water to suitable on or off-site storm water drainage infrastructure. In addition, the clayey pavement subgrade should be properly sloped to avoid dips or pockets where water may become trapped. Dips in the clayey subgrade could result in a

“bathtub” effect, which may trap water and potentially soften the subgrade. Good drainage should help reduce the possibility of the subgrade materials becoming saturated over a long period of time.

Infiltration and subterranean water are generally the main sources of water that should be considered in the design of the pavement. Based on the lack of an observed groundwater level in the borings, we consider surface water infiltration through the pavement joints, pores or cracks in the pavement, and through shoulders and areas adjacent to pavements to be the main source of water to be considered for pavement design on this project. To reduce the potential for shallow perched water to develop in areas of the site, “stub” or “finger” drains should be considered around catch basins and in other low-lying areas to reduce the accumulation of water above and within the subgrade soils and aggregate base. As an alternative to the use of stub or finger drains, existing manholes and storm sewer inlets could be perforated with 1-inch diameter holes at 2-foot centers, and the manhole/inlet wrapped with non-woven geotextile to reduce migration of material into the manhole/inlet. The holes could be placed at 90 degree intervals around the perimeter of the manhole, and the excavation around the manhole backfilled with free draining granular materials.

Sheet drainage across large pavement areas allows more water to enter the pavement through openings, cracks and weak points over time, which can adversely affect the base course and subgrade. This can increase the potential risk of premature pavement deterioration, distress and long-term pavement maintenance issues. Intermediate drains should be installed at adequate intervals to reduce the length of sheet flow across the pavement surface.

Pavement Maintenance: A sound maintenance program should be implemented to help maintain and enhance the performance of pavements, and help attain the design service life. A preventative maintenance program should be implemented early in the pavement life to be effective. The “standard in the industry” supported by research indicates that preventative maintenance should typically begin within 2 to 5 years of the placement of pavement. However, maintenance of pavement on undocumented fill sites may require more maintenance and sooner. Failure to perform preventative maintenance will reduce the service life of the pavement, and increase the costs for corrective maintenance and full pavement rehabilitation. To help reduce water infiltration thru the pavement section into the base course layer, which may result in softening of the subgrade and deterioration of the pavement, we recommend timely sealing of pavement joints and cracks with elastomeric caulk. We recommend exterior pavements be observed for distresses, such as cracks, depressions and poor drainage, at least twice a year, typically once in the spring and fall.

5.2 INFILTRATION DESIGN CONSIDERATIONS

The recommendations presented in this section follow the general guidelines of WDNR Conservation Practice Standard 1002, Site Evaluation for Stormwater Infiltration.

ECS understands a storm water management device would likely be constructed in the area of Boring 1 and 2. The “Soil and Site Evaluation – Storm” log included in Appendix B of this report indicates the storm water design parameters for each soil strata encountered in these borings. We determined the design infiltration rate using Table 2 of the Wisconsin Department of Natural Resources Conservation Practice Standards “Site Evaluation for Storm Water Infiltration (1002)”.

Design Infiltration Rates: Based on the results of the exploration, the borings encountered soils that have a USDA soil classification of clay (c). Based on the soil textural classification and the

guidelines provided in Table 2 of the WDNR Conservation Practice Standard 1002, the infiltration rate of the clay soils encountered in the borings is 0.07 inches per hour. The soil infiltration rate for each soil strata encountered in the borings can be found on the ***Soil and Site Evaluation – Storm*** form included in Appendix B of this report. Infiltration rates based on soil textural classification and the guidelines provided in Table 2 of the WDNR Conservation Practice Standard 1002 should be adjusted for the least permeable soil layer within 5-feet of each of the listed intervals.

Estimation of the final design infiltration rate should consider the effects of any engineered fill placed, surface vegetation, erosion control devices, and potential groundwater mounding. Prior to and during construction, the design infiltration rate of the soil at the basin bottom should be verified. Compaction of the basin bottom subgrade during and following construction should be prevented as this may reduce the infiltration rate of the soil. This may require exclusion of construction traffic from the infiltration bottom, or loosening of the subgrade soil, such as by raking or discing. Sediment allowed to accumulate at the basin bottom will reduce infiltration. Measures should be taken to reduce accumulation of sediment. Periodic removal of sediment should be expected.

Infiltration Feasibility: Based on the conditions encountered in the test borings, the site is considered to have a low capacity for the infiltration of storm water because of the predominant clayey soils encountered at the test boring locations. In accordance with Section V, Step C5 of the Wisconsin Department of Natural Resources (WDNR) Conservation Practice Standard 1002, the clayey soils have a correlated infiltration rate of 0.07 inches per hour, which is less than 0.6 inches per hour, and as such, these soils are anticipated to be exempt from the infiltration requirements per section NR 151.12(5)(c)6.a of the Wisconsin Administrative Code.

Our scope of services is not inclusive of all steps involved in the initial site screening (Part A) of the WDNR Technical Standard 1002. Therefore, other conditions may exist at, or near the site that could exclude or exempt the site, or portions of the site from the infiltration requirements. Additional evaluation must be conducted prior to the design and implementation of an infiltration device at this site so that its construction meets Wisconsin Administrative Code requirements.

Details of the proposed storm water management device were not provided to ECS at the time of this report preparation; it is recommended ECS be provided the storm water management plans, when available, to check that the recommendations provided herein are applicable. ECS should also be called on to provide observation and testing during infiltration basin construction.

6.0 SITE CONSTRUCTION RECOMMENDATIONS

6.1 SUBGRADE PREPARATION

6.1.1 Existing Utilities

ECS recommends utilities not reused should be capped-off and removed or properly abandoned in-place in accordance with local codes and ordinances. The excavations for utilities to be removed in the influence zone of new construction are recommended to be backfilled with engineered fill. Grading operations must be done carefully so that existing utilities are not damaged or disturbed. Utility invert elevations, depths and sizes should be checked relative to the planned utility and pavement elevations to determine what specific concerns are present.

6.1.2 Stripping and Initial Site Preparation

The subgrade preparation should consist of stripping all pavement to be removed, organic soils (topsoil) and any other soft or unsuitable materials from the 5-foot expanded pavement limits and 5 feet beyond the toe of engineered fills, where feasible. ECS should be called on to observe and document that topsoil and other unsuitable surficial materials have been removed prior to the placement of engineered fill or construction of structures. Please note, topsoil removal should not be based on soil coloration alone. After removal of the root mat, it may be possible to leave some darker soils in place provided the soil contains no more than 5 percent organic matter as determined by ASTM D2974, has the recommended strength characteristics and is stable under proofroll. A landscape architect should approve any topsoil or other materials proposed for use in future landscape areas.

6.1.3 Special Subgrade Preparations – Utilities

The existing fill encountered in Boring 2, 3, 4 and 6 present a concern for the support of utility pipes and structures. The existing fill extended to a depth of between 2 and 4 feet below the existing grade. We anticipate the utilities will likely extend below the encountered fill depths. However, deeper existing fill could be encountered during construction, so the owner should be aware of an increased risk of settlement in excess of 1 inch associated with the construction of utilities on these soils. In our opinion, the risk would be high for utilities constructed on undocumented fill. Based on the anticipated acceptable risk level of the owner, ECS recommends the removal of all existing fill from below utility pipes and structures.

Excavations subcut below the proposed pipe or structure elevation should be oversized one foot horizontally in each direction for every foot of sub-base fill placed below the pipe or structure, to a maximum oversize of 3 feet on each side of the pipe. All over-excavated soils should be replaced with properly compacted engineered fill.

6.1.4 Special Subgrade Preparations – Pavements

In general, pavements derive their strength from the characteristics of the subgrade soils, the sub-base fill and the base course, and the concrete or bituminous upper layer and lower layer mixtures. In the design of the pavement, the total pavement thickness typically includes the concrete or bituminous mixtures, base course, and sub-base fill. The site has generally suitable

conditions for the proposed pavement construction. However, the existing fill and frost susceptible soils encountered in the borings present concerns for the pavement performance.

Existing Fill: The existing fill encountered in Boring 2, 3, 4 and 6 extended to a depth of between 2 and 4 feet below the existing grade. Existing fill provides a concern for the performance of the pavement system. The owner should be aware of the increased risk for a reduced pavement performance associated with constructing pavements on undocumented fill. The risk exists because undocumented fill has a higher potential for variable density. In addition, this risk tends to increase with the presence of organic soils (more than 5 percent organic content). However, because of natural soil variability, every construction site has at least a very low risk for a reduced pavement performance.

Based primarily on the standard penetration N-values, in ECS's opinion, the risk for reduced pavement performance associated with the existing fill at this site would generally be moderate to high. However, the risk could be reduced to a low risk where the existing fill contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch. Based on our assumption of the owner's acceptable level of risk, we recommend removing all existing fill which contains greater than 5 percent organic content, or does not meet the above proof-rolling requirements, from within 2 feet of the finished pavement grade. The removed material should then be replaced with a compacted engineered fill in accordance with the **Earthwork Operations** section of this report.

Frost Susceptible Soils: The frost susceptible clayey and silty soils encountered in the borings provide another concern for the pavement system. ECS wishes to note, a risk for reduced pavement performance exists with the construction of pavements on frost susceptible soil. The reduced pavement performance may occur because of potential detrimental frost heaving and spring thaw weakening. The risk associated with frost susceptible soils can be reduced by removal of all frost susceptible soils within 3 feet of the finished pavement grade. In our opinion, the risk at this site related to the frost susceptible soils would generally be moderate. However, the risk would be high to very high in areas where highly frost susceptible silt or silty clay soil is present within 3 feet of the finished pavement grade.

Summary: Based on our assumption of the owner's acceptable risk level (as outlined in the "Project Information" section of this report), we recommend the following:

1. Remove all existing fill soils from within 2 feet of the finished pavement grade, unless it contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch.
2. All over-excavated material should be replaced with compacted engineered fill in accordance with the **Earthwork Operations** section of this report.
3. If the owner is willing to accept a moderate risk for reduced pavement performance, then we anticipate a majority of the frost susceptible soils that have adequate strength will remain in place below pavements. However, we recommend removing all highly frost susceptible soils (e.g. silt and silty clay) from within 3 feet of the finished pavement grade.

6.1.5 Proofrolling

After the removal of all unsuitable surface materials, cutting to the proposed subgrade, and prior to the placement of any engineered fill or other construction materials, the exposed subgrade should be observed by ECS. The contractor should thoroughly proofroll the exposed subgrade with previously approved construction equipment having a minimum axle load of 9 tons (e.g. fully loaded tandem-axle dump truck in clayey soils or large smooth drum roller in sandy soils). The contractor should traverse the areas subject to proofrolling by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying any localized yielding materials. Unstable or pumping subgrade areas identified during the proofroll should be marked for repair prior to the placement of any subsequent engineered fill or other construction materials. Unstable subgrade repair methods, such as undercutting or moisture conditioning or chemical stabilization, should be discussed with ECS to determine the appropriate procedure(s) with regard to the existing conditions causing the instability. A test pit(s) may be excavated to explore the shallow subsurface materials in the area of the instability to aid in determining the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade.

Near surface subgrade soils having a high moisture content and/or those having N-values less than 10 bpf may not pass a proofroll, and may need to be undercut or repaired. Some undercutting or repair of unstable subgrade soils should be anticipated during pavement subgrade preparation. If construction will occur during wet times of the year (such as during the spring or fall months) or immediately following extended periods of rain, then seasonal reduction of the near surface soil strength will occur. This may cause additional unstable or pumping subgrade areas for constructability concerns.

The actual quantity of the subgrade undercut or stabilization should be determined by ECS at the time of construction.

6.1.6 Site Temporary Dewatering

None of the borings encountered a measureable groundwater level. However, seasonal variations in precipitation and site drainage conditions can cause the accumulation of water in the upper soils, particularly within existing fill and more permeable granular soils underlain by less permeable clayey soils. Where excavations extend less than 2 feet below the groundwater level, initial attempts to control water may be accomplished by pumping from sump pits in the excavation bottom, which are backfilled with AASHTO Size No. 57 Stone or open-graded bedding material. If water control cannot be maintained with sump pumps, or where excavations extend more than 2 feet below the static groundwater level, a more substantial excavation dewatering system, such as a temporary well point system, may be required to control groundwater seepage during construction. Dewatering should continue until all earthwork operations and backfilling have extended above the water table.

Lowering the static groundwater level can adversely affect nearby structures, utilities and other construction. We recommend any dewatering scheme be reviewed by ECS and a contractor who specializes in this type of work prior to its implementation.

6.1.7 Subgrade Stabilization

Subgrade Benching: Fill should not be placed on ground with a slope steeper than 5H:1V. The ground should be benched so as to allow for fill placement on a horizontal surface.

Subgrade Compaction: Upon completion of subgrade documentation, the exposed subgrade within the 5-foot expanded pavement area limits should be moisture conditioned to within -1 to +3 percent of the soil's optimum moisture content to a depth of 10 inches, and be compacted with suitable equipment (minimum 10-ton vibratory roller for granular soils or a sheepsfoot roller for cohesive soils). The subgrade within the expanded pavement limits should be compacted to a dry density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). Beyond these areas, compaction should be to at least 90 percent. ECS should be called on to document the achievement of proper subgrade compaction.

Subgrade Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits for structures, pavements, fills, and slopes, etc. We recommend performing field density testing of subgrade soils at the frequencies listed in Table 6.1.1 of this report.

Table 6.1.1 Frequency of Subgrade Compaction Testing

Location	Frequency of Tests
Pavement Areas	1 test per 10,000 sq. ft.
Other Non-Critical Areas	1 test per 10,000 sq. ft.

Subgrade Stabilization: In some areas, particularly low-lying, wet areas of the site, undercutting of excessively soft materials may be considered inefficient. In such areas the use of a reinforcing geotextile or geogrid might be employed, under the advisement of ECS. Suitable stabilization materials may include medium duty woven geotextile fabrics or geogrids. The suitability and employment of reinforcing or stabilization products should be determined in the field by ECS personnel, in accordance with project specifications.

6.2 EARTHWORK OPERATIONS

6.2.1 Engineered Fill Materials

Product Submittals: Prior to placement of engineered fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will include natural moisture content, grain-size distribution, and moisture-density relationships for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Engineered Fill Materials: Engineered fills should consist of approved materials, free of organic matter and debris, contain no particle sizes greater than 3 inches in the largest dimension, and have a Liquid Limit and Plasticity Index less than 40 and 15, respectively. Open-graded materials, such as coarser sands and gravels (SP and GP), which contain void space in their mass should not be used in engineered fills unless properly encapsulated within a filter geotextile.

If the fill is to provide non-frost susceptible characteristics, it must be classified as a clean GW, GP, SW or SP per Unified Soil Classification System (ASTM D-2487).

Unsatisfactory Materials: Unsatisfactory engineered fill materials, which do not satisfy the requirements for suitable materials, include topsoil and organic materials (PT, OH, OL), silt (ML), sandy silt (ML), elastic Silt (MH), silty clay (CL-ML), sandy silty clay (CL-ML) and high plasticity clay (CH). Topsoil is not recommended to be used as engineered fill, but may be suitable for use within future landscape areas. A landscape architect should approve any materials proposed for use in future landscape areas.

Pea gravel is not recommended to be used as engineered fill. Pea gravel has round/smooth characteristics, no fines and does not interlock when compacted, which makes it more susceptible to future movement and instability resulting in excessive and variable settlement.

On-Site Borrow Suitability: The on-site soil, with the exception of silty clay (CL-ML) and fat clay (CH), may be feasible to use as engineered fill, but should be further evaluated and approved by ECS prior to its use. On-site soil used as engineered fill must not contain an adverse amount of organic matter, and must be free of frozen matter, deleterious materials, over-sized material (maximum 3-inch particle diameter), or chemicals that may result in the material being classified as "contaminated." Depending on the conditions at the time of construction, the use of on-site soil for foundation support may not be practical, and use of an imported high quality granular material may be needed for foundation support. The material used as engineered fill must be considered low volume change material with a maximum Liquid Limit of 40 and maximum Plasticity Index of 15, unless specifically tested and found to have low volume change properties and approved by ECS. The soils must be compacted within a narrow range of the materials optimum moisture content. The soil samples had relatively high moisture contents so the contractor should expect some drying of on-site soil prior to reuse as engineered fill. The soil should not be compacted too dry as it may lose its apparent stability if it later becomes wet. The suitability of engineered fill materials should be checked by ECS prior to placement. Sorting to remove over-sized material (i.e. cobbles) should be expected at this site prior to re-use of the on-site soil as engineered fill.

Natural soil deposits considered unsuitable by virtue of their plasticity are present on the site. The moisture contents of many of the samples were observed to generally be more than 5 percent above the optimum moisture contents of the material. The construction team should anticipate moisture conditioning (mostly drying) of subgrade soils and engineered fill lifts at this site. Soil chemical modification may be helpful to reduce moisture contents of subgrade soils and fills.

6.2.2 Compaction

Engineered Fill Compaction: Engineered fill within the expanded pavement limits should be placed in maximum 8-inch thick loose lifts, moisture conditioned as necessary to within -1 to +3 percent of the soil's optimum moisture content, and be compacted with suitable equipment to a dry density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). Beyond these areas, the engineered fill should be compacted to at least 90 percent. ECS should be called on to document the achievement of proper fill compaction.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for pavements and embankment slopes, etc., at the

time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified representative of ECS to document the achievement of the minimum compaction requirements. Field density testing of fills should be performed at the frequencies shown in Table 6.2.1, but not less than 2 tests per lift.

Table 6.2.1 Frequency of Compaction Tests in Fill Areas

Location	Frequency of Tests
Pavement Areas	1 test per 10,000 sq. ft. per lift
Utility Trenches	1 test per 200 linear ft. per lift
All Other Non-Critical Areas	1 test per 10,000 sq. ft. per lift

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be suitable for the fine-grained soils (Clays). A vibratory steel drum roller or plate compactor should be used for compaction of coarse-grained soils (Sands and Gravels) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of engineered fill or other fill soils and aggregates. Scarify, aerate and moisture condition excessively wet soils or aggregates.

At the end of each work day, all fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the contractor may need to scarify existing subgrades to a depth of 4 inches or more so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Drying and compaction of wet soils is typically difficult during the cold, winter months. Accordingly, earthwork should be performed during the warmer, drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to reduce ponding of water which has a tendency to degrade subgrade soils. Alternatively, if these soils cannot be stabilized by conventional methods as previously discussed, chemical modifications of the subgrade soils, such as with lime, cement or other materials, may be utilized to adjust the moisture content. If lime or cement is utilized to control moisture contents and/or for stabilization, then ECS recommends the use of Quick Lime, Calciment® or regular Type 1 cement. The soil modification procedure, such as determination of the quantity of additive, and mixing and curing procedures, should be evaluated before implementation. The contractor should be required to minimize dusting or implement dust control measures.

Where fill materials will be placed to widen existing embankment fills, or placed up against sloping ground, the soil subgrade should be scarified, and the new fill benched and keyed into the existing material. Fill material should be placed in horizontal lifts. In confined areas such as utility trenches, portable compaction equipment and thin lifts of 3 inches to 4 inches may be required to achieve specified degrees of compaction.

We recommend the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture during dry weather, but moisture control may be difficult during winter months or extended periods of rain. The control of moisture content of clay soils can be difficult when these soils become wet. Further, construction traffic can easily degrade soils that have an elevated moisture content.

6.3 PAVEMENT SUBGRADE OBSERVATIONS

Pavement Subgrade Verification: ECS should be called on to observe and test exposed subgrade within the expanded pavement limits prior to engineered fill placement and pavement construction to check achievement of adequate subgrade preparation. A proofroll using a loaded dump truck should be performed in their presence at that time. Once subgrades have been prepared to the satisfaction of ECS, subgrades should be properly compacted and new engineered fill can be placed. Existing subgrades to a depth of at least 10 inches and all engineered fill should be properly moisture conditioned and compacted to the required in-place density. ECS should check the condition of the prepared subgrade prior to placement of the subbase stone and pavement. If there will be significant time lag between the subgrade check and placement of the subbase stone and pavement, ECS may need to recheck the condition of the subgrade before placement of stone and pavement. Prior to final pavement construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

6.4 UTILITY INSTALLATIONS

Utility Subgrades: The native soils encountered in our exploration are expected to be generally suitable for support of utility pipes. However, we recommend removing all existing fill and soils that contain more than 5 percent organic content from below utilities. The pipe subgrade should be observed and probed for stability by ECS to evaluate the suitability of the encountered materials. Any loose or unsuitable materials encountered at the utility pipe subgrade elevation should be removed and replaced with suitable compacted engineered fill or pipe bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for engineered fill given in this report. Compacted backfill should be free of topsoil, roots, ice, or any other material designated by ECS as unsuitable. The backfill should be moisture conditioned, placed, and compacted in accordance with the recommendations of this report.

6.5 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During the cooler and wetter periods of the year, the construction team should anticipate delays and additional costs. At these times, reduction of soil moisture may need to be accomplished by mechanical manipulation to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development

areas, including pavement areas. ECS recommends the design team consider designating a haul road and construction staging area to limit the areas of disturbance and to prevent construction traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used in pavement areas provided it has not been mixed with silty or clayey soils.

Surface Drainage: The contractor should properly maintain surface drainage conditions. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or steeper to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to reduce infiltration of surface water.

Excavation Safety: The contractor should make and maintain all excavations and slopes in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing and constructing stable, excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in OSHA 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; ECS does not imply such responsibility, and the contractor, design team and owner should not infer it.

Excavation Instability: Excavation stability and caving problems may occur in areas containing existing fill soils. The instability problems will generally depend upon the excavation depth, length of time the excavations remain open, inclination of excavation side-walls, magnitude and location of surcharges near the excavations, groundwater levels and the suitability of any dewatering systems if needed.

Existing Construction Considerations: Site preparation will require complete removal and proper disposal of the existing pavement to be removed and any remnants of previous construction, including all underground utilities that are not reused, etc. Disposal of debris should be in accordance with local, state and federal regulations for the material type. It should be noted that any construction remnants left in-place may cause excavation difficulties for new utilities and/or landscape plantings. All excavations must be backfilled with compacted engineered fill performed under engineering controlled conditions.

Removal of the existing pavement and placement of engineered backfill is recommended to be observed and tested by ECS. Alteration to the recommendations of this report may be needed, if conditions different than those noted on the boring logs are revealed below the existing construction.

Existing Fill Considerations: Existing fill was encountered in Boring 2, 3, 4, and 6. Unsuitable materials may have been buried beneath the site surface during previous site grading or construction not detected by the test borings. Questionable material, if encountered, is

recommended to be evaluated by ECS to determine if the material needs to be removed and replaced with engineered fill. Alteration to the recommendations of this report may be needed, if excavations reveal conditions different than those noted on the test boring logs.

Erosion Control: The surface soils may be erodible. Therefore, the Contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. All erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

Bidding/Estimating Considerations: Contractors bidding or undertaking any work at the site should examine the results of the subsurface exploration, satisfy themselves as to the adequacy of the information for bidding and construction, make their own interpretation of the data, and consider the effect it may have on their cost proposal, construction techniques, schedule, and equipment capabilities. Furthermore, contractors should complete any additional fieldwork and investigation they deem necessary to properly prepare a cost proposal for the site work. Soil borings do not provide the same wide-scale view of the subsurface conditions that is obtained during site grading, excavation or other aspects of earthwork construction. Additional scope may be required to obtain more detailed subsurface information needed for earthwork bid preparation, which could include test pits to better understand the lateral and vertical extents of the subsurface materials of concern such as existing undocumented fill. Even with this additional information, budget contingencies should be carried in construction to help cover potential variations in subsurface conditions.

7.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide preliminary geotechnical-related design and construction aspects of the project. In fulfilling our obligations and responsibilities, as listed in the proposal, we performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

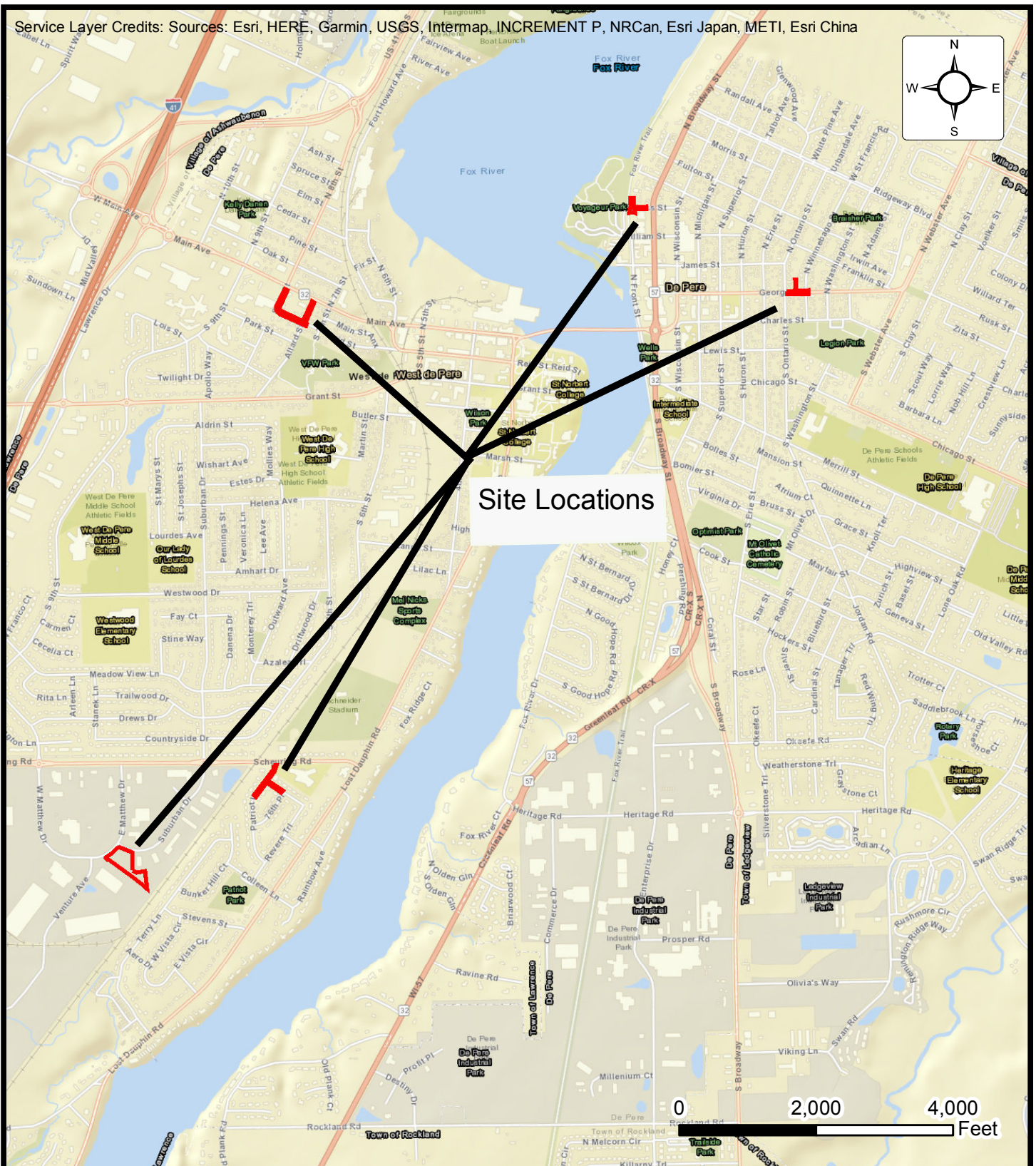
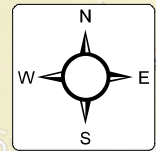
The description of the proposed project is based on information provided to ECS by the City of De Pere. If any of this information is inaccurate, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

We recommend that ECS be retained to review the project's plans and specifications pertaining to our services so that we may evaluate consistency of those plans/specifications with the intent of this geotechnical report.

Field observations, and quality assurance testing during earthwork, foundations, floor slabs, utility, pavement, and storm water management device installation are an extension of and integral to the geotechnical design recommendation. We recommend the owner retain these quality assurance services and that ECS be retained to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A - Drawings & Reports

Site Location Diagram
Boring Location Diagram



0 2,000 4,000 Feet

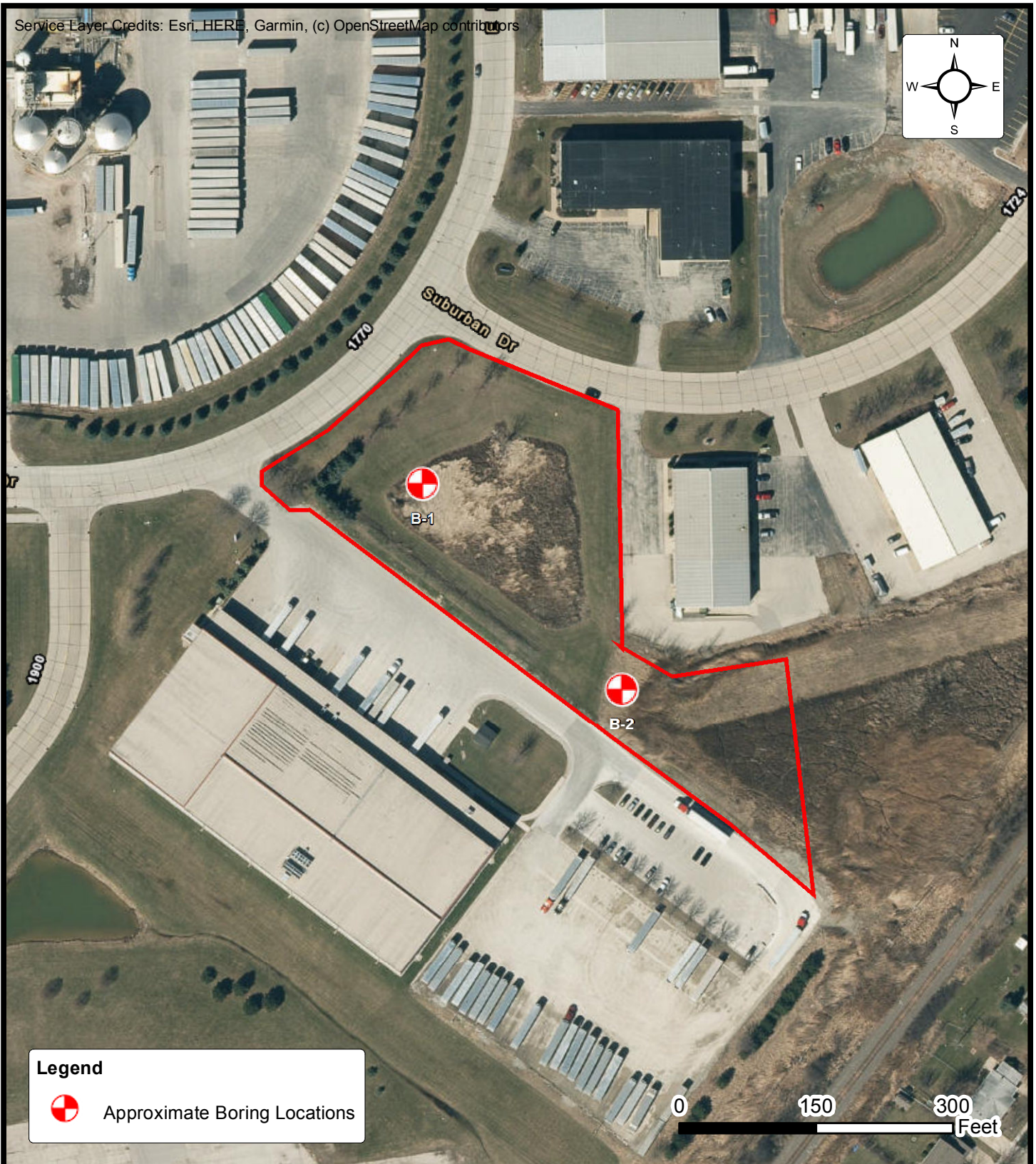


Site Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

ENGINEER CAR
SCALE 1" = 2000'
PROJECT NO. 59:1669-A
SHEET 1 OF 1
DATE 9/30/2019



Legend



Approximate Boring Locations



Boring Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

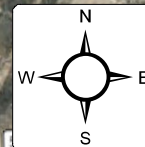
ENGINEER
CAR

SCALE
1" = 150'

PROJECT NO.
59:1669-A

SHEET
1 OF 5

DATE
9/30/2019



Legend



Approximate Boring Locations



Boring Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

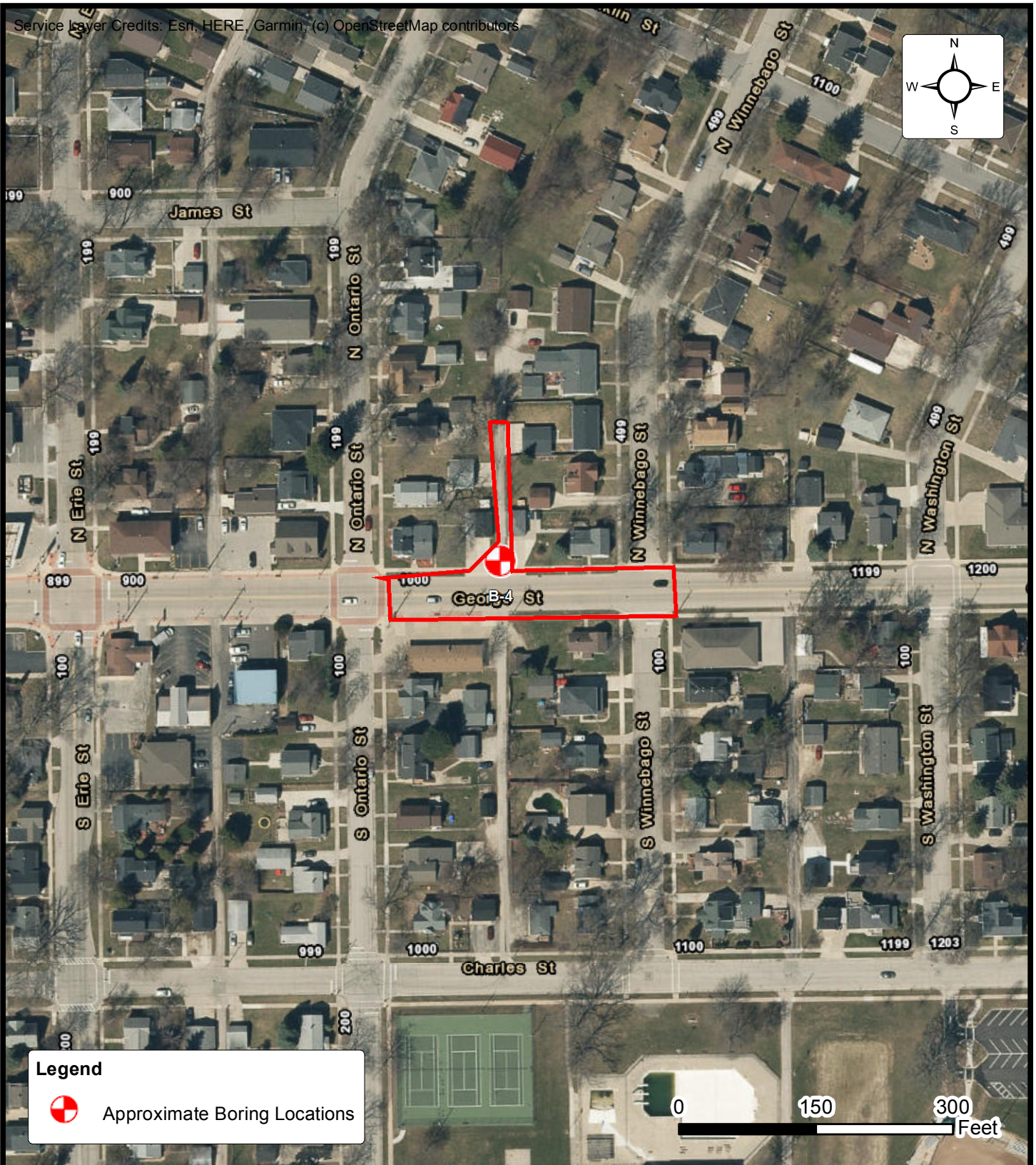
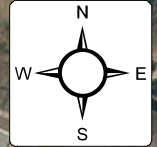
ENGINEER
CAR

SCALE
1" = 150'

PROJECT NO.
59:1669-A

SHEET
2 OF 5

DATE
9/30/2019



Legend



Approximate Boring Locations



Boring Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

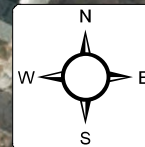
ENGINEER
CAR

SCALE
1" = 150'

PROJECT NO.
59:1669-A

SHEET
3 OF 5

DATE
9/30/2019



Legend



Approximate Boring Locations

0 150 300
Feet



Boring Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

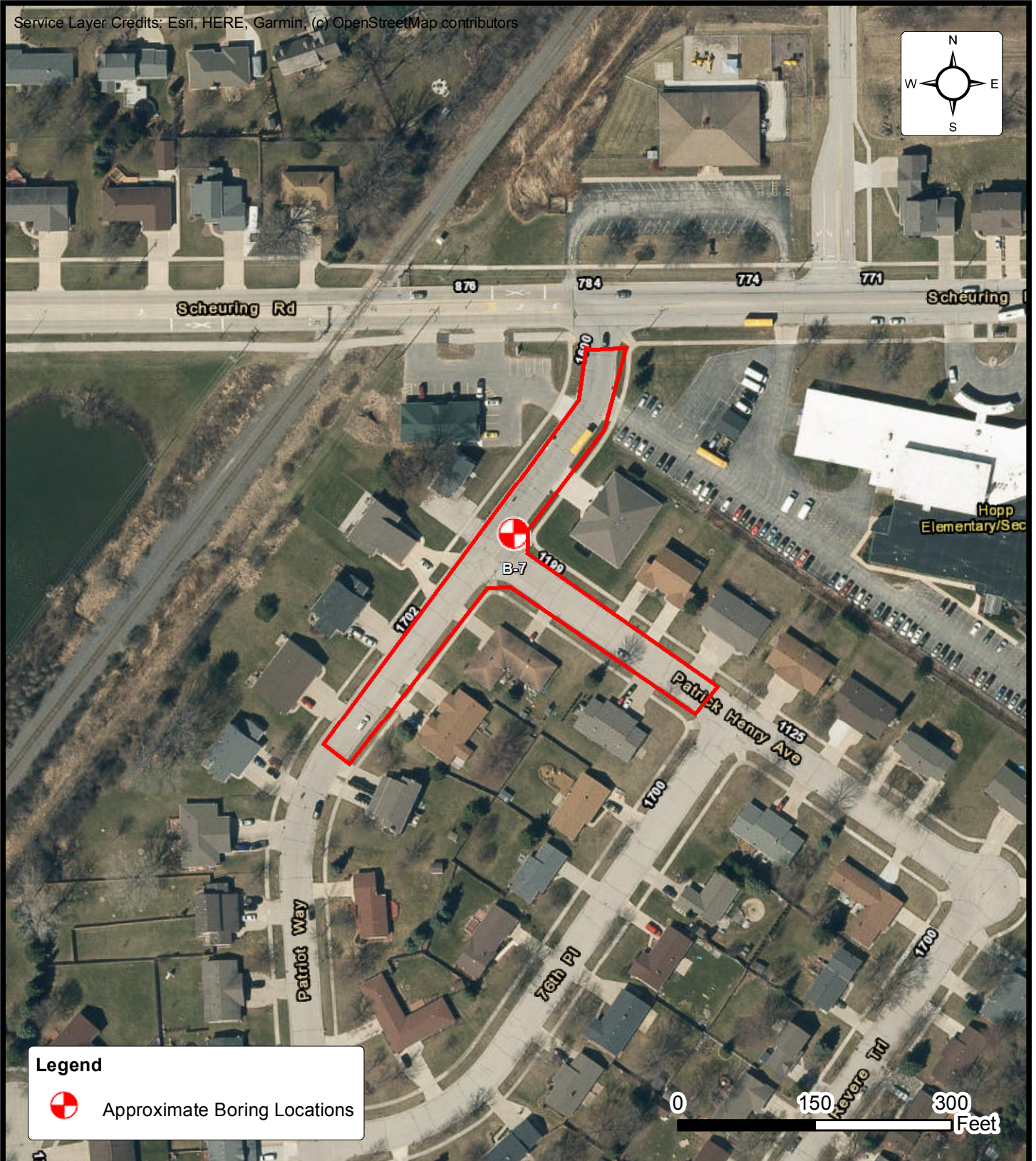
ENGINEER
CAR

SCALE
1" = 150'

PROJECT NO.
59:1669-A

SHEET
4 OF 5

DATE
9/30/2019



Legend



Approximate Boring Locations



Boring Location Diagram DE PERE PROJECT 20-01

VARIOUS STREETS, DE PERE, WISCONSIN

CITY OF DE PERE

ENGINEER
CAR

SCALE
1" = 150'

PROJECT NO.
59:1669-A

SHEET
5 OF 5

DATE
9/30/2019

APPENDIX B - Field Operations

Reference Notes for Boring Logs
Boring Logs 1 through 7
Soil and Site Evaluation - Storm



REFERENCE NOTES FOR BORING LOGS

MATERIAL ^{1,2}	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	SHALE
	BRICK
	AGGREGATE BASE COURSE
	FILL³ MAN-PLACED SOILS
	GW WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM SILTY GRAVEL gravel-sand-silt mixtures
	GC CLAYEY GRAVEL gravel-sand-clay mixtures
	SW WELL-GRADED SAND gravelly sand, little or no fines
	SP POORLY-GRADED SAND gravelly sand, little or no fines
	SM SILTY SAND sand-silt mixtures
	SC CLAYEY SAND sand-clay mixtures
	ML SILT non-plastic to medium plasticity
	MH ELASTIC SILT high plasticity
	CL LEAN CLAY low to medium plasticity
	CH FAT CLAY high plasticity
	OL ORGANIC SILT or CLAY non-plastic to low plasticity
	OH ORGANIC SILT or CLAY high plasticity
	PT PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION	PARTICLE SIZES	
Boulders	12 inches (300 mm) or larger	
Cobbles	3 inches to 12 inches (75 mm to 300 mm)	
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)	

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q_p ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Medium Stiff
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
Dual Symbol (ex: SW-SM)	10	10
With	15 - 20	15 - 25
Adjective (ex: "Silty")	≥25	≥30

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS ⁶		
	WL	Water Level (WS)(WD) (WS) While Sampling (WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

¹Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-09 Note 16.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-09.

CLIENT City of De Pere				JOB # 1669-A		BORING # 1		SHEET 1 OF 1		
PROJECT NAME De Pere Project 20-01				ARCHITECT-ENGINEER						
SITE LOCATION De Pere, Brown County, Wisconsin										
East Matthew Drive Storm Pond				—○— CALIBRATED PENETROMETER TONS/FT² 1 2 3 4 5+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY RQD% REC.% 20% 40% 60% 80% 100% ⊗ STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+						
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	
					BOTTOM OF CASING → LOSS OF CIRCULATION → SURFACE ELEVATION Not Determined					
0	S-1	SS	24	20	Topsoil Thickness [3"] (CH) {A-7-6} Lacustrine, FAT CLAY WITH SEAMS OF SILT, reddish brown with gray, moist, medium stiff to stiff				6	
	S-2	SS	24	8					14	
5	S-3	SS	24	20	(CL) {A-6} Glacial till, LEAN CLAY WITH SAND AND GRAVEL, brown, moist, stiff				15	
	S-4	SS	18	4					15	
	S-5	SS	18	14					14	
10	S-6	SS	18	8					14	
	S-7	SS	18	18					9	
15	S-8	SS	18	13	(CL/ML, CH) {A-4, A-7-6} Lacustrine, SILTY CLAY WITH VARVES OF FAT CLAY, gray and reddish brown, moist, stiff				10	
	S-9	SS	18	18					9	
20					END OF BORING @ 20'				2	
					Note: Boring offset 30 feet west of staked location.					
25										
30										
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%										
WL None WS ☐ WD ☒					BORING STARTED 11/15/19					
WL(BCR) WL(ACR) None					BORING COMPLETED 11/15/19		CAVE IN DEPTH			
WL					RIG Truck FOREMAN BB/CB		DRILLING METHOD 3 1/4" HSA 0' to 20' (AH)			

CLIENT City of De Pere				JOB # 1669-A		BORING # 2		SHEET 1 OF 1		
PROJECT NAME De Pere Project 20-01				ARCHITECT-ENGINEER						
SITE LOCATION De Pere, Brown County, Wisconsin										

East Matthew Drive Storm Pond					CALIBRATED PENETROMETER TONS/FT ² 1 2 3 4 5+				
PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % 					ROCK QUALITY DESIGNATION & RECOVERY ROD% REC.% 20% 40% 60% 80% 100%				
STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+									

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING	LOSS OF CIRCULATION		
0					Topsoil Thickness [2"]			
1	S-1	SS	24	14	(CL) {A-6} FILL, LEAN CLAY, trace organics, dark brown, moist, medium stiff			6
2								2
3	S-2	SS	24	10	(CL) {A-6} Glacial till, LEAN CLAY WITH SAND, brown, moist, medium stiff			9
4								3
5	S-3	SS	24	20	(CL) {A-6} Glacial till, SANDY LEAN CLAY, brown, moist, stiff			9
6								3
7	S-4	SS	18	0				14
8								6
9								7
10	S-5	SS	18	16	(CL) {A-6} Glacial till, LEAN CLAY WITH SAND AND GRAVEL, brown, moist, stiff			11
11								4
12	S-6	SS	18	18				12
13								5
14								7
15	S-7	SS	18	18				11
16								3
17								5
18								6
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%

WL None WS ☐ WD ☒		BORING STARTED 11/15/19		
WL(BCR) WL(ACR) None		BORING COMPLETED 11/15/19		CAVE IN DEPTH
WL		RIG Truck FOREMAN BB/CB		DRILLING METHOD 3 1/4" HSA 0' to 15' (AH)

CLIENT City of De Pere				JOB # 1669-A		BORING # 3		SHEET 1 OF 1			
PROJECT NAME De Pere Project 20-01				ARCHITECT-ENGINEER							
SITE LOCATION De Pere, Brown County, Wisconsin											
Cass Street				—○— CALIBRATED PENETROMETER TONS/FT² 1 2 3 4 5+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY RQD% REC.% 20% 40% 60% 80% 100% ⊗ STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+							
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	BOTTOM OF CASING	LOSS OF CIRCULATION	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					SURFACE ELEVATION Not Determined						
0	S-1	SS	24	16	Topsoil Thickness [3"] (CL,OL) {A-6, A-8} FILL, MIXTURE OF LEAN CLAY WITH SAND AND ORGANIC SILT, dark brown and black, moist, stiff to medium stiff						2
	S-2	SS	24	18							5
	S-3	SS	24	18	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, medium stiff to stiff						9
5	S-4	SS	18	14							6
	S-5	SS	18	1							4
10	END OF BORING @ 10'										3
	Note: Boring offset 5 feet south of staked location.										5
15											6
20											
25											
30											
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%											
WL None WS ☐ WD ☒		BORING STARTED 11/14/19									
WL(BCR) WL(ACR) None		BORING COMPLETED 11/14/19		CAVE IN DEPTH							
WL		RIG Truck FOREMAN BB/CB		DRILLING METHOD 3 1/4" HSA 0' to 10' (AH)							

CLIENT		JOB #	BORING #	SHEET					
City of De Pere		1669-A	4	1 OF 1					
PROJECT NAME		ARCHITECT-ENGINEER							
De Pere Project 20-01									
SITE LOCATION					○ CALIBRATED PENETROMETER TONS/FT² 12345+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY RQD% REC.% 20% 40% 60% 80% 100% STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+				
De Pere, Brown County, Wisconsin									
Alley									
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING → LOSS OF CIRCULATION →				
SURFACE ELEVATION					Not Determined				
0					Asphalt Thickness [5"]				
	S-1	SS	24	8	Base Course Thickness [7"]				
					(CL) {A-6} FILL, SANDY LEAN CLAY, trace gravel and organics, dark brown, moist, medium stiff				
	S-2	SS	24	6	(CL) {A-6} Lacustrine, LEAN CLAY, brown, moist, stiff				
5					END OF BORING @ 5'				
10									
15									
20									
25									
30									
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%									
WL None		WS	WD	BORING STARTED		11/14/19			
WL(BCR)		WL(ACR) None		BORING COMPLETED		11/14/19		CAVE IN DEPTH	
WL				RIG Truck		FOREMAN BB/CB		DRILLING METHOD 3 1/4" HSA 0' to 5' (AH)	

CLIENT City of De Pere				JOB # 1669-A		BORING # 5		SHEET 1 OF 1		
PROJECT NAME De Pere Project 20-01				ARCHITECT-ENGINEER						
SITE LOCATION De Pere, Brown County, Wisconsin										
South 8th Street				—○— CALIBRATED PENETROMETER TONS/FT² 1 2 3 4 5+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY RQD% REC.% 20% 40% 60% 80% 100% ⊗ STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+						
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	
					BOTTOM OF CASING → LOSS OF CIRCULATION → SURFACE ELEVATION Not Determined					
0					Asphalt Thickness [7"]					
					Base Course Thickness [10"]					
	S-1	SS	18	18	(CL) {A-6} Lacustrine, LEAN CLAY WITH SAND, brown, moist, medium stiff				3	
	S-2	SS	24	11					3	
5					END OF BORING @ 5'				3	
					Note: Boring offset 5 feet south of marked location.				4	
									7	
10										
15										
20										
25										
30										
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%										
WL None WS ☐ WD ☒					BORING STARTED 11/14/19					
WL(BCR) WL(ACR) None					BORING COMPLETED 11/14/19			CAVE IN DEPTH		
WL					RIG Truck FOREMAN BB/CB			DRILLING METHOD 3 1/4" HSA 0' to 5' (AH)		

CLIENT City of De Pere				JOB # 1669-A		BORING # 6		SHEET 1 OF 1		
PROJECT NAME De Pere Project 20-01				ARCHITECT-ENGINEER						
SITE LOCATION De Pere, Brown County, Wisconsin										
Reid Street				—○— CALIBRATED PENETROMETER TONS/FT² 1 2 3 4 5+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY RQD% REC.% 20% 40% 60% 80% 100% ⊗ STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+						
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	
					BOTTOM OF CASING → LOSS OF CIRCULATION → SURFACE ELEVATION Not Determined					
0					Asphalt Thickness [7"]					
					Base Course Thickness [10"]					
	S-1	SS	18	10	(CL, OL) {A-6, A-8} FILL, A MIXTURE OF LEAN CLAY WITH SAND AND ORGANIC SILT, dark brown and black, moist, stiff				5 6 7	
	S-2	SS	24	24	(CL) {A-6} Lacustrine, LEAN CLAY WITH SEAMS OF SILT, brown with gray, moist, stiff				4 5 6 7 10	
5					END OF BORING @ 5'					
10										
15										
20										
25										
30										

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%

WL None WD ☒	BORING STARTED 11/14/19	
WL(BCR) WL(ACR) None	BORING COMPLETED 11/14/19	CAVE IN DEPTH
WL	RIG Truck FOREMAN BB/CB	DRILLING METHOD 3 1/4" HSA 0' to 5' (AH)

CLIENT						JOB #	BORING #	SHEET
City of De Pere						1669-A	7	1 OF 1
PROJECT NAME						ARCHITECT-ENGINEER		
De Pere Project 20-01								
SITE LOCATION								
De Pere, Brown County, Wisconsin								
Patriot Way								
CALIBRATED PENETROMETER TONS/FT² 1 2 3 4 5+ PLASTIC LIMIT WATER CONTENT % LIQUID LIMIT % ROCK QUALITY DESIGNATION & RECOVERY ROC% REC.% 20% 40% 60% 80% 100% STANDARD PENETRATION BLOWS/FT 10 20 30 40 50+								
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING	LOSS OF CIRCULATION		
					SURFACE ELEVATION	Not Determined		
0					Asphalt Thickness [5"]			3
	S-1	SS	24	24	Base Course Thickness [7"]			4
					(CL) {A-6} Lacustrine, LEAN CLAY WITH SEAMS OF SILT, brown with gray, moist, stiff to very stiff			5
	S-2	SS	24	18				6
								8
5					END OF BORING @ 5'			11
								12
								16
10								
15								
20								
25								
30								
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU 20% 40% 60% 80% 100%								
WL None WS ☐ WD ☒					BORING STARTED 11/14/19			
WL(BCR) WL(ACR) None					BORING COMPLETED 11/14/19		CAVE IN DEPTH	
WL					RIG Truck FOREMAN BB/CB		DRILLING METHOD 3 1/4" HSA 0' to 5' (AH)	



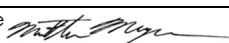
SOIL AND SITE EVALUATION – STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Page 1 of 1

Attach a complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road Please print all information Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]				County Brown			
				Parcel I.D. WD-364-D-506-2			
				Reviewed by: M. King / M. Meyer Date: 11/18/19			
Property Owner City of De Pere		Property Location Govt. Lot SE 1/4 NE 1/4 S 32 T 23 N R 20 E (or) W					
Property Owner' Mail Address 925 S. Sixth Street		Lot #		Block #		Subd. Name or CSM #	
City State Zip Code Phone Number De Pere WI 54115 920.339.4060		☒ City ☐ Village ☐ Town		Nearest Road De Pere E. Matthew Drive			
Drainage area _____ ☐ sq. ft ☐ acres Test site suitable for (check all that apply): ☐ Site not suitable; ☐ Bioretention; ☐ Subsurface Dispersal System; ☐ Reuse; ☐ Irrigation; ☐ Other _____		Hydraulic Application Test Method ☒ Morphological Evaluation ☐ Double Ring Infiltrometer ☐ Other: (specify) _____		Soil Moisture Date of soil borings: <u>11/15/19</u> USDA-NRCS WETS Value: ☐ Dry = 1; ☒ Normal = 2; ☐ Wet = 3.			

1	#OBS. ☐ Pit ☒ Boring	Ground surface elevation. <u>N/A</u> ft.	Depth to limiting factor. <u>---</u> ft.								
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr	
A	0 – 3	7.5 YR 3/3	No Redox Features	c	0, cdy	fr	c	0 – 5	70 – 80	0.07	
C	3 – 48	5 YR 5/4	No Redox Features	c	1, f, abk	fi	c	0 – 5	80 – 90	0.07	
C	48 – 180	7.5 YR 5/3	No Redox Features	c	1, f, sbk	fi	c	10 – 15	70 – 80	0.07	
C	180 – 240	7.5 YR 5/1	No Redox Features	sic, c	1, f, pl	fi	--	0 – 5	90 – 100	0.07	
Comments:											

2	#OBS. ☐ Pit ☒ Boring	Ground surface elevation. <u>N/A</u> ft.	Depth to limiting factor. <u>---</u> ft.								
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr	
--	0 – 2	7.5 YR 3/3	No Redox Features	c	0, cdy	fr	c	0 – 5	70 – 80	0.07	
--	2 – 24	7.5 YR 3/2	No Redox Features	c	0, cdy	fi	c	0 – 5	70 – 80	0.07	
C	24 – 60	7.5 YR 5/4	No Redox Features	c	1, f, sbk	fi	c	0 – 5	75 – 85	0.07	
C	60 – 96	7.5 YR 5/4	No Redox Features	c	1, f, sbk	fi	c	0 – 5	60 – 70	0.07	
C	96 – 180	7.5 YR 5/4	No Redox Features	c	1, f, sbk	fi	--	10 – 15	70 – 80	0.07	
Comments:											
Name (Please Print) Matthew A. Meyer				Signature 				Credential Number 1053414			
Address 1060 Breezewood Lane, Suite 102 Neenah, WI 54956				Date Evaluation Conducted				Telephone Number 920-886-1406			

SBD-10793 (R01/17)

WDNR

September 2017

APPENDIX C - Supplemental Report Documents

Important Information about This Geotechnical-Engineering Report

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual site-wide subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

conspicuously that you’ve included the material for information purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration.* Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists.*



**GEOPROFESSIONAL
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APPENDIX B

**CHAPTER NR528 MANAGEMENT OF ACCUMULATED SEDIMENT
FROM STORM WATER MANAGEMENT STRUCTURES**

Chapter NR 528

MANAGEMENT OF ACCUMULATED SEDIMENT FROM
STORM WATER MANAGEMENT STRUCTURES

NR 528.01	Purpose.	NR 528.06	Sediment evaluation, certification requirements and end use determination.
NR 528.02	Applicability.	NR 528.07	End uses of accumulated sediment.
NR 528.03	Definitions.	NR 528.08	Record retention.
NR 528.04	Locational criteria, performance standards, erosion control measures and ceiling levels.	NR 528.09	Department assistance.
NR 528.05	Management decisions.	NR 528.10	Sediment management program evaluation and compliance.

NR 528.01 Purpose. The purpose of this chapter is to provide a streamlined process for the management of accumulated sediment removed from storm water management structures in a manner that protects public health, safety and the environment and reduces the need to dispose of accumulated sediment in landfills. This chapter is adopted under authority of s. 227.11, Stats., and ch. 289, Stats.

History: CR 08–111: cr. Register November 2009 No. 647, eff. 12–1–09.

NR 528.02 Applicability. (1) Except as otherwise provided, this chapter governs the management of accumulated sediment from storm water management structures.

(2) This chapter applies to a sediment manager who is required or authorized to undertake the removal and subsequent management of the accumulated sediment derived from the operation and maintenance of storm water management structures.

(3) This chapter does not apply to any of the following materials:

(a) Sediment removed from underground structures such as catch basin sumps or other proprietary flow-through storm water sedimentation devices.

(b) Sediment removed from waste water treatment devices regulated under s. SPS 382.34.

(c) Material collected through street sweepings.

(d) Sediment managed subject to the permit requirements of s. 30.20, Stats., for removal of material from beds of navigable waters or s. 30.30 or 30.31, Stats., for harbor improvements.

(e) Hazardous waste regulated under chs. NR 660 to 679.

Note: The sediment manager or environmental professional may use knowledge or testing in accordance with NR 662.011 to determine if the accumulated sediment is subject to chs. NR 660 to 679. In general, accumulated sediment is not subject to regulation under chs. NR 660 to 679.

(f) Solid waste regulated under chs. NR 518 and 538.

(g) Sediment removed from temporary sediment control practices during the construction phase of a project.

(h) Contaminated soils regulated under chs. NR 700 to 722.

(i) Metallic mining operations for nonferrous minerals as defined in s. 293.01 (9), Stats., and regulated under ch. NR 182.

(j) Materials associated with metallic mining operations for ferrous minerals as defined in s. 295.41 (26), Stats., including mining wastes as defined in s. 295.41 (30) and sediment from stormwater management structures, as regulated under subch. III of ch. 295, Stats.

Note: Use of this code does not release the sediment manager from the requirement to obtain other permits as appropriate. Permits may include ch. NR 216, for land disturbance of one or more acres; ch. 30, Stats., for waterway and wetland activities such as dredging of ponds or culvert cleaning; and ch. 283, Stats., for general wastewater discharges such as Pit/Trench Dewatering and Carriage and Interstitial Water from Dredging Operations.

History: CR 08–111: cr. Register November 2009 No. 647, eff. 12–1–09; correction in (3) (b) made under s. 13.92 (4) (b) 7., Stats., Register February 2012 No. 674; CR 13–057: cr. (3) (i), (j) Register July 2015 No. 715, eff. 8–1–15.

NR 528.03 Definitions. The following definitions as well as the definitions in ch. 289, Stats., and s. NR 500.03 are applicable to the terms used in this chapter.

(1) “Accumulated sediment” means settleable solid material contained in storm water runoff that is collected, retained and subsequently removed from storm water management structures.

(2) “Commercial” means those buildings for which the primary function involves the sale of goods or services.

(3) “Confined geotechnical fill” has the meaning specified in s. NR 538.03 (2).

Note: Section NR 538.03 (2) defines confined geotechnical fill to mean “a fill that is covered by an impervious surface such as concrete or asphalt.”

(4) “Dedicated sediment management sites” means sites designed and operated for multiple applications of accumulated sediment from one or more storm water management structures where the accumulated sediment is landspread or treated.

(5) “Drainage area” means the land area from which the storm water management structure receives runoff.

(6) “End use” or “end use of accumulated sediment” means use in agriculture, landscaping, site stabilization, construction, transportation projects, fill, backfill, reclamation of disturbed sites including mine reclamation, the placement of accumulated sediment and similar uses.

(7) “Environmental professional” means a professional engineer registered pursuant to s. 443.04, Stats., or a professional soil scientist, geologist or hydrologist licensed under ch. 470, Stats.

(8) “Forebay” means a pond-like structure that receives storm water prior to its entrance into the main portion of the pond with the purpose of removing coarse-grained sediment.

(9) “General fill” means a location where accumulated sediment is used as fill in a natural topographic depression, an excavation such as an existing borrow area or an intentional excavation or to build up or shape the local landscape.

(10) “Industrial” means those buildings used for the manufacture, storage or distribution of goods.

(11) “Institutional” means any public or private schools or colleges, churches, hospitals, or other government facilities not covered under commercial.

(12) “Landspreading of accumulated sediment” means the application of accumulated sediment in thin layers to the surface of the land or incorporation into subsurface soils.

(13) “Licensed landfill” means a solid waste disposal facility with a license obtained pursuant to ch. 289, Stats.

(14) “Multi-family residential” means housing for three or more attached dwelling units in a single building.

(15) “Sediment manager” means any person with responsibility for the management of the accumulated sediment and may include those holding fee title, an easement or other interest in a property, or their agent including contractors or subcontractors and others required or authorized to undertake removal and subse-

quent management of accumulated sediment, including data gathering, reporting and recordkeeping.

(16) “Storm water management structure” means a device that detains, retains and treats storm water runoff resulting in the accumulation of sediment, and pollutants carried in the runoff. Such structures are characterized by having an outlet that discharges to waters of the state but only in response to storm events and includes wet and dry detention ponds and infiltration basins but not landscape ponds on private property with no designed inlet or outlet.

(17) “Waters of the state” means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water courses, drainage systems and other surface water or groundwater, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and retained completely upon the property of a person.

History: CR 08–111: cr. Register November 2009 No. 647, eff. 12–1–09.

NR 528.04 Locational criteria, performance standards, erosion control measures and ceiling levels. The sediment manager shall ensure that the management option selected for the accumulated sediment is implemented in accordance with all of the following applicable criteria:

(1) **LOCATIONAL CRITERIA.** (a) Except as provided in par. (b), a site where accumulated sediment is used or deposited shall meet the locational criteria in Table 1.

(b) The locational criteria in Table 1 do not apply to sediment from a drainage area that meets all the criteria in s. NR 528.06 (2) or to sediment used in an end use in accordance with s. NR 528.07 (3) or to sediment managed under s. NR 528.07 (7).

(2) **PERFORMANCE STANDARDS.** (a) No person may use or dispose of accumulated sediment at a site if there is a reasonable

probability that the sediment end use will cause any of the following:

1. A significant adverse impact on wetlands as defined in ch. NR 103.

2. A take of an endangered or threatened species prohibited by s. 29.604, Stats.

3. A detrimental effect on any surface water.

4. A detrimental effect on groundwater quality that will cause or exacerbate an exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140. The point of standards application is defined by s. NR 140.22 (1).

(b) The accumulated sediment end use shall comply with all applicable department approvals, federal, state and local requirements and be conducted in accordance with this subsection.

Note: Compliance with this section does not release the sediment manager from the requirement to obtain other permits as appropriate. Permits may include ch. NR 216, for land disturbance of one or more acres; ch. 30, Stats., for waterway and wetland activities such as dredging of ponds or culvert cleaning; and ch. 283, Stats., for general wastewater discharges such as Pit/Trench Dewatering and Carriage and Interstitial Water from Dredging Operations.

(3) **EROSION CONTROL MEASURES.** The sediment manager shall ensure that measures are taken to control run-on and runoff, minimize the area disturbed by the project, minimize loss of fugitive dust and retain sediment on the site during and after the placement of the accumulated sediment. Runoff control measures shall be effectively inspected and maintained. Any area where topsoil is exposed shall be seeded and mulched or otherwise stabilized within 48 hours of placement. Where applicable, the requirements in ch. NR 216 shall be followed.

(4) **CEILING LEVELS.** If the sample results obtained in accordance with s. NR 528.06 (3) (b) exceed any of the ceiling levels listed in Table 2, the sediment manager shall ensure that the accumulated sediment is disposed of in a licensed landfill.

Table 1
Locational Criteria for Management of Accumulated Sediment

	Bedrock or Groundwater Table	Public Water Supply Well	Private Water Supply Well	Lake, Wetland, Pond or Any Navigable Waterway or Sinkhole	Residence	School, Health-care Facility
Separation Distance in Feet	3	1,200	250	200	250	1,000 ¹ surface spread 500 incorporated

¹ The 1,000 foot separation applies when the pathogen or indicator organism level exceeds the criteria specified in s. NR 204.07 (6) and application to the surface of the land is the desired management option; if incorporated into the soil, then 500 feet is appropriate. However, if the pathogen or indicator organism level is below the criteria, the setback distance for a residence may be used.

Table 2
Ceiling Levels Governing Management of Accumulated Sediment

Parameter	Ceiling Level ppm or mg/kg on a dry weight basis unless otherwise specified
Total Arsenic	8
Total Cadmium	10
Total Chromium	100
Total Lead	250
pH	Less than 5 or greater than 10 standard units
Electrical conductivity	8 deciSiemens/meter (dS/m) ¹ at 25°C

¹ deciSiemens/meter (dS/m) and mmhos per centimeter are equivalent; dS/m is the modern nomenclature.

History: CR 08–111: cr. Register November 2009 No. 647, eff. 12–1–09.

NR 528.05 Management decisions. (1) The sediment manager shall determine from the options listed in s. NR 528.07 an appropriate end use for the accumulated sediment based on consideration of all of the following factors:

(a) Evaluation of sediment sample data in s. NR 528.06 (4).

(b) Completion and evaluation of the appropriate portions of the certification form supplied by the department.

(c) Factors specific to the site where sediment is generated as identified in s. [NR 528.06 \(3\) \(b\) 5](#).

(d) Factors specific to the site proposed for end use of the accumulated sediment.

(e) Any other factors relevant to the minimization of risk to

public health, safety or the environment.

(2) No sediment may be used in a manner which is likely to cause any significant risk to public health, safety or the environment.

History: CR 08-111: cr. [Register November 2009 No. 647](#), eff. 12-1-09.

NR 528.06 Sediment evaluation, certification requirements and end use determination. Except in cases where the accumulated sediment will be disposed of in a licensed landfill, the sediment manager shall evaluate the characteristics of the drainage area from which the accumulated sediment is removed, sample the accumulated sediment, where applicable, evaluate the sample results, choose an end use and create and maintain a record by completing the required certification form as set out in this section.

(1) **CERTIFICATION FORM.** The sediment manager shall ensure that the applicable portions of the certification form supplied by the department are accurately and completely filled out and certified.

Note: Copies of the certification form may be obtained from the department of natural resources, bureau of waste and materials management, 101 South Webster Street, Natural Resources Building, P.O. Box 7921, Madison, Wisconsin 53707-7921, (608) 266-2111, DNRwastematerials@Wisconsin.gov.

(2) **DRAINAGE AREA EVALUATION.** The sediment manager shall certify in accordance with sub. (1) whether or not the drainage area meets all of the following criteria:

(a) Has less than 15% commercial, multi-family residential, institutional and industrial land uses combined, excluding green space such as parks, cemeteries, golf courses and lawns.

(b) Has no areas of suspected contamination that may adversely affect sediment management.

(c) Has no other existing conditions or known historical events that may adversely affect sediment management.

(d) Has no reported hazardous substance spills regulated under s. 292.11, Stats., since construction or since accumulated sediment was last removed.

(3) **SAMPLING.** If the drainage area does not meet the criteria in sub. (2), the sediment manager shall ensure that the sediment is properly sampled and analyzed, each time, prior to its removal from the storm water management structure. Routine sediment sampling and handling shall be performed in accordance with par. (a). Sediment sample analysis shall be performed in accordance with par. (b). All sediment sampling, handling and analysis shall be performed under the supervision of an environmental professional in accordance with par. (c). The sediment manager may elect to use previous sampling results in lieu of new sediment sampling and analysis if the drainage area has not changed significantly since the sediment was last tested.

(a) *Sample collection.* Representative accumulated sediment samples shall be obtained by meeting all of the following criteria:

1. Samples shall be obtained using proper handling, storage and delivery procedures required by the laboratory where the samples will be analyzed.

2. Samples shall be obtained that are representative of the entire volume of sediment to be removed and managed using all of the following:

a. One sample shall be obtained in each surface acre or portion of a surface acre in storm water management structures that are 4 acres or less. This sample may consist of multiple samples composited together to obtain a representative sample.

b. At least one sample per quadrant shall be obtained when the storm water management structure is greater than 4 acres.

c. A greater number of samples shall be obtained when necessary to represent the variability in the sediment due to factors such as sediment transport within the structure, changes in land use in the drainage area and the duration of time during which the sediment has been accumulating.

d. Samples shall be taken to the depth of the anticipated sediment removal.

3. Samples shall be obtained to provide a volume of sediment adequate to meet the analytical requirements based on the parameters to be analyzed for and the methods of analysis to be performed by the laboratory where the samples will be analyzed.

Note: Additional information on how to perform sediment sampling can be found in existing USEPA Guidance for its Biosolids Rule, CFR Part 503. Please see Methods and Manner of Sampling. http://www.epa.gov/owm/mtb/biosolids/503pe/503pe_6.pdf

(b) *Sample analysis.* Samples collected in par. (a) shall be analyzed for all of the constituents in this paragraph. Constituents listed in subds. 3. and 5. shall be analyzed at a laboratory certified or registered in accordance with ch. NR 149:

1. Percent solids, percent organic matter, electrical conductivity as a saturated paste and pH to provide information on physical characteristics.

2. Total Kjeldahl nitrogen, total nitrate nitrogen, total phosphorus and total potassium to provide information on nutrient content. Nutrient content shall be expressed as mg/kg on a dry weight basis.

3. Total arsenic, cadmium, copper, chromium, lead, nickel and zinc to ensure these are not present at elevated levels and as indicator parameters showing the potential presence of other heavy metals and possible need for additional sampling. Results shall be calculated on a dry weight basis.

4. Pathogen or indicator organism, as referenced in ss. NR 204.06 (2) (b) 4. or 204.07 (6), showing the potential presence of other pathogens and possible need for additional pathogen sampling and analysis.

Note: Effective with the incorporation of this rule, the current pathogen indicator organism is fecal coliform. The maximum allowable density is 1,000 expressed as MPN/gTS (most probable number per gram of total solids on a dry weight basis).

5. Additional parameters beyond those required under subds. 1. to 4. if deemed necessary by the sediment manager based on all of the following factors:

a. The present and past land uses in the drainage area served by the storm water management structure such as commercial, multi-family residential, institutional and industrial.

b. Any other known or suspected sources of contamination.

c. Existing conditions or known historical events that may affect the likelihood of safe sediment management.

d. Reported hazardous substance spills under s. 292.11, Stats., in the drainage area since construction or since accumulated sediment was last removed.

e. Sample data indicating significantly elevated levels of contaminants above background concentrations for indicator parameters in subds. 3. and 4. that may affect management in s. NR 528.05.

f. Any other applicable administrative code requirements.

Note: Additional parameters may include priority pollutants or TCLP constituents.

(c) *Oversight.* Sample collection and evaluation pursuant to this subsection shall be performed by or under the supervision of an environmental professional.

(4) **SEDIMENT SAMPLE DATA EVALUATION.** The sediment manager shall ensure that the sediment sample data collected in accordance with sub. (3) (b) 1. to 4. are evaluated by an environmental professional in accordance with sub. (3) (c) and compared with the ceiling levels in s. NR 528.04 (4) Table 2 and, based on the results of the evaluation, that all of the following applicable steps are taken:

(a) If any of the ceiling levels in s. NR 528.04 (4) Table 2 are exceeded, the accumulated sediment shall be disposed of in a licensed landfill.

(b) If the indicator parameter levels do not exceed the ceiling levels in s. NR 528.04 (4) Table 2, but show elevated levels of contaminants, follow-up sampling shall be performed in accordance with sub. (3) (b) 5., results evaluated, an appropriate end use determined in accordance with sub. (5) and the certification form supplied by the department completed.

(c) If the indicator parameter levels do not indicate elevated levels of contaminants, the sediment manager shall ensure that an

appropriate end use is determined in accordance with sub. (5) and the certification form supplied by the department is completed.

Note: Technical support resources provided by the department may be referred to for assistance in evaluating the data when addressing elevated levels of contaminants.

(5) **END USE DETERMINATION.** The sediment manager shall ensure that the appropriate end use of accumulated sediment is determined using all of the following applicable steps:

(a) The sediment manager shall complete the appropriate sections of the certification form provided by the department and certify whether or not the drainage area from which the sediment is removed meets the criteria in sub. (2).

(b) If all the criteria in sub. (2) are met, the sediment is not required to be sampled and the locational criteria in s. NR 528.04 (1) are not required to be met.

(c) If the criterion in sub. (2) (a) is not met, but the criteria in sub. (2) (b) to (d) are met, the sediment shall be sampled pursuant to sub. (3) and the appropriate sections of the certification form provided by the department shall be completed. If the sample data indicates elevated levels of contaminants, additional parameters shall be sampled for in accordance with sub. (3) (b) 5. and the appropriate sections of the certification form provided by the department shall be completed.

(d) If the criteria in sub. (2) (b), (c) or (d) are not met, sources of contamination in the drainage area shall be further evaluated, additional sampling shall be considered in accordance with sub. (3) (b) 5. and the appropriate sections of the certification form provided by the department shall be completed.

History: CR 08-111: cr. Register November 2009 No. 647, eff. 12-1-09.

NR 528.07 End uses of accumulated sediment. The sediment manager shall ensure that an end use is chosen for the accumulated sediment in accordance with this section.

(1) **LICENSED LANDFILL DISPOSAL.** (a) If the sediment manager determines that the accumulated sediment will be disposed of in a licensed landfill, the sediment does not need to be evaluated or sampled under s. NR 528.06.

Note: The landfill operator should be contacted to determine whether the landfill requires the sediment be sampled before it is accepted at the landfill. The sediment may be appropriate for use as daily or final cover in accordance with the landfill's approved plan of operation.

(b) If any of the ceiling levels in s. NR 528.04 (4) Table 2 are exceeded, the accumulated sediment shall be disposed of in a licensed landfill.

(2) **GENERAL FILL.** (a) The accumulated sediment may be used as general fill in a designed excavation or to improve a site by restoring original contours, filling depressions, improving or stabilizing borrow areas or other disturbed sites.

Note: Examples of uses may include reclamation of abandoned mines, fill in a topographic depression, or other uses that build up or shape the local landscape, mitigate safety or erosion hazards or otherwise improve disturbed sites.

(b) All of the following steps shall be taken to stabilize the site:

1. Complete placement and preparation of the sediment and any needed topsoil, substitute soil or cover material within 6 months or less of initiating placement in the project year.

2. Stabilize the cover, topsoil, substitute soil or sediment to prevent erosion due to wind and water, perform all revegetation, mulching or other equivalent stabilization activities prior to the end of the growing season and minimize the exposure of the sediment to the environment by employing one or more of the following measures:

a. Place an impermeable cover.

b. Place a topsoil layer of no less than 6 inches.

c. Use the accumulated sediment in lieu of or in combination with topsoil, provided it is capable of supporting a vegetative cover.

3. Revegetate, mulch or otherwise stabilize the sediment within 48 hours of completing the sediment disposal.

(c) Control erosion during and after the placement of sediment in accordance with s. NR 528.04 (3).

(3) **CONFINED GEOTECHNICAL FILL.** The accumulated sediment may be used as confined geotechnical fill for a variety of uses such as subbase under paved lots and subbase or subgrade for building construction.

Note: Examples of confined geotechnical fill uses may include construction and maintenance of non-department of transportation projects, bridge abutment backfill or other similar uses in which the sediment is covered by an impervious surface such as concrete, asphalt, a building or similar material and thus not exposed to the environment.

(4) **LANDSPREADING.** The sediment manager shall ensure that the appropriate sections of the certification form provided by the department are completed and the other requirements in s. NR 528.06 are complied with. When landspreading the accumulated sediment, all of the following shall apply:

(a) *Site evaluation.* The site where the accumulated sediment is proposed to be landspread shall be evaluated to ensure that the site is suitable. The site evaluation shall include the soil factors in Table 3 and may include assessment of organic matter content, cation exchange capacity, soil permeability and any other characteristics or factors that would affect the mobility and attenuation of pollutants present in the sediment. The site shall meet the locational criteria in s. NR 528.04 (1) Table 1.

(b) *Application rate and depth.* The application rate of accumulated sediment may not exceed 5 dry tons per acre per year and may not exceed 15 dry tons per acre total loading during the life of the landspreading site. The depth of the application may not exceed 18 inches.

1. Neither the 5 dry tons per acre per year application rate limitation or the 15 dry tons per acre landspreading site life limit apply when accumulated sediment is used as a component of a marketable soil amendment product pursuant to a contract or used to facilitate nonmetallic mine reclamation as part of an approved reclamation plan.

2. The 5 dry tons per acre annual limit and the total loading limit of 15 dry tons per acre landspreading life may be adjusted based on soil sampling results, plant tissue monitoring data, landspreading site records or other data. All data necessary to justify the exceedances and extended use shall be collected and evaluated and all data and records shall be maintained in accordance with s. NR 528.08.

Table 3
Soil Factors for Site Evaluation

Soil Factor ¹	Acceptability for Landspreading Accumulated Sediment			
	Unacceptable	Poor	Adequate	Preferred
pH standard units	Less than 5.3 or greater than 8.0	5.3 to 5.6 or 7.7 to 7.9	5.7 to 5.9 7.3 to 7.6	6.0 to 7.2
Texture		Silty clay ² , clay ² , sand ³ , loamy sand ³	Sandy loam, silty clay loam, sandy clay	Loam, silt loam, silt, clay loam, sandy clay loam

¹ Obtain from soil survey, not in-field test

² Acceptable only when incorporated

³ Acceptable only with increased site management determined by the sediment manager

(c) *Nutrient content.* The nitrogen and phosphorous content shall be provided to the receiver of the accumulated sediment if the receiver has a nutrient management plan for the acreage where the accumulated sediment will be landspread.

Note: Farmers required to follow a nutrient management plan need information on nutrient content in order to comply with NRCS Standard 590 available at: <http://efotg.nrcs.usda.gov/references/public/WI/590.pdf>.

(d) *Uniform application.* The application of accumulated sediment to the land surface shall be uniform when surface applied, as well as during injection or incorporation.

(e) *Application limitations.* Accumulated sediment may not be applied under any of the following situations:

1. On frozen or saturated ground.
2. When precipitation capable of producing runoff is forecast within 24 hours of the time of planned application, during or immediately after a precipitation event.
3. On slopes greater than 6%.

(f) *Pathogens.* In all cases where a pathogen risk exists due to the presence of pathogens, as indicated by evidence of the pathogen or indicator organism and level per s. NR 528.06 (3) (b) 4., the following management practices shall be implemented:

1. At a minimum, accumulated sediment shall be incorporated into the surface soil to a depth of at least 6 inches by disking or an equivalent process and may include other measures such as signage, restriction on site access or other appropriate measures.
2. The following waiting periods and access restrictions shall apply beginning on the date when the landspreading activity is completed:
 - a. When lands are used for the production of forage crops, landspreading shall occur only after harvest has occurred and before any new growth reaches 6 inches.
 - b. When lands are used for food crops intended for human consumption, a period of at least 14 months shall elapse prior to emergence of the food crop.
 - c. When lands are used for grazing, at least 30 days shall elapse prior to allowing access to non-dairy animals and at least 60 days shall elapse before allowing access to dairy animals.
 - d. When lands are subject to public access or used for the harvest of crops grown for fiber or any other forage or crop production, not covered in this subd. 2. a. to c., a period of at least 30 days shall elapse before the site may be accessed or used.

(5) **DEDICATED SEDIMENT MANAGEMENT SITE.** The end use of landspreading or sediment treatment at a dedicated management site may be chosen if the sites are owned or leased by a municipality or other responsible unit of government. The sediment manager shall assume any additional site management, site monitoring and recordkeeping responsibilities that are necessary to minimize risk to public health, safety and the environment.

(a) When sediment is used at a dedicated site, the sediment manager shall ensure that the appropriate portions of the certification form provided by the department are completed. Based on the information obtained in accordance with s. NR 528.06, the sediment manager may choose to use the accumulated sediment for productive purposes including the growth of herbaceous or woody plants for harvest or for treatment to reduce contaminants in the accumulated sediment in accordance with this subsection.

(b) All of the following restrictions shall apply to dedicated sediment management sites:

1. The locational criteria in s. NR 528.04 (1) shall be met.
2. The sediment shall be applied to a depth of 18 inches or less below ground surface.
3. When the dedicated site is used for sediment treatment so as to attenuate or reduce contaminants in the accumulated sediment, only non-food chain crops or woody plants for harvest or phyto-remediation purposes may be grown.
4. In cases where the annual application rate or lifetime load-limit in sub. (4) (b) are not exceeded, the provisions of sub. (4)

(b) 2. do not apply. In cases where the 5 dry tons per acre annual application rate limitation or the 15 dry tons per acre site life limit are exceeded, the sediment manager shall ensure that sub. (4) (b) 2. is followed as well as take any additional measures or practices that may be necessary to ensure safe long-term site use. These may include practices such as the collection and evaluation of contaminants in soils, plant tissue, other environmental receptors or monitoring devices. The sediment manager shall track the sediment application rates and cumulative site loading totals for contaminants in soil or other receptors as appropriate. The sediment manager shall ensure that any additional measures are implemented that may be necessary such as enhanced site management practices to control run-on and runoff and erosion control practices. At a minimum, the erosion control requirements of s. NR 528.04 (3) shall be met.

5. Accumulated sediment may be applied on frozen ground and on slopes greater than 6% or more provided the sediment management is performed in compliance with s. NR 528.04 (3) and adequate and permanent run-on and runoff controls are in place and maintained.

6. Sediment may not be applied when precipitation capable of producing runoff is forecast within 24 hours of the time of planned application, or during or immediately after a precipitation event.

7. In all cases where a pathogen risk exists due to the presence of pathogens, as indicated by evidence of the pathogen or indicator organism and level per s. NR 528.06 (3) (b) 4., then the waiting periods in sub. (4) (f) apply.

8. In all cases where a pathogen risk exists due to the presence of pathogens, no grazing is allowed and no human food chain crops may be grown where the sediment has been applied.

9. In all cases where a pathogen risk exists, permanent public access controls shall be put in place and access restricted during any year when the sediment application occurs.

(c) The sediment manager shall ensure that an affidavit is filed indicating that the site was used for a dedicated sediment management site in the registrar of deeds office in the county where the site is located.

(d) The sediment manager shall ensure that all appropriate completed certification forms, all sediment sampling results and all monitoring data and site use and sediment loading records are retained in accordance with s. NR 528.08.

(6) **SMALL QUANTITY, COARSE GRAINED SEDIMENT MANAGEMENT.** The sediment manager may choose to manage certain kinds of coarse grained sediment as provided under this subsection.

(a) If the annual volume of accumulated sediment to be managed is 100 cubic yards or less and comprised primarily of coarse-grained material such as that found in the forebay, the sediment manager shall complete the appropriate sections of the certification form provided by the department and indicate the following criteria are met:

1. The volume of accumulated sediment to be managed is 100 cubic yards or less.
2. No more than 15% of the material, as a percentage by weight, passes a No. 200 sieve.

(b) If the criteria in par. (a) are met, no chemical testing is required and the sediment shall be managed in accordance with s. NR 528.04 (1) and (2). If either par. (a) 1. or 2. are not met, the accumulated sediment may not be used in accordance with this subsection and shall be managed in accordance with this section and ss. NR 528.04 to 528.06 and 528.08.

(c) The sediment manager shall maintain responsibility for managing the accumulated sediment.

(d) The sediment manager shall retain records in accordance with s. NR 528.08.

(7) **END USE UNDER OTHER CONTROL.** Accumulated sediment may be used under the control of another program in accordance

with this subsection. End use of accumulated sediment pursuant to this subsection is not subject to the other provisions of this chapter provided equivalent protectiveness is afforded, including the provisions of ss. NR 528.04 (2) to (4).

(a) Accumulated sediment may be used in accordance with a department of transportation facility construction and maintenance project contract of specific duration that requires compliance with department of transportation standard specifications for site restoration and stabilization. Sampling in accordance with s. NR 528.06 (3) is not required when there is another requirement such as a contract or permit that requires sampling encompassing the s. NR 528.06 (3) requirements. Sampling pursuant to s. NR 528.06 (3) shall be performed if the contract or permit does not require sampling encompassing these requirements.

Note: The requirements of the WDOT concerning the restoration of disturbed sites are found in sections of the standard specifications including those addressing erosion control, seeding, final clean-up and may be found in: WDOT Standard Specifications, see <http://roadwaystandards.dot.wi.gov/standards/stndspec/index.htm>.

(b) Accumulated sediment may be used in accordance with a ch. NR 135 nonmetallic mine reclamation permit issued pursuant to an applicable nonmetallic mining reclamation ordinance. Sampling in accordance with s. NR 528.06 (3) is not required when there is another document such as a contract or permit that requires sampling encompassing the s. NR 528.06 (3) requirements. Sampling pursuant to s. NR 528.06 (3) shall be performed if the contract or permit does not require sampling encompassing these requirements.

History: CR 08-111: cr. Register November 2009 No. 647, eff. 12-1-09.

NR 528.08 Record retention. All completed certification forms, all sediment sampling results, other site monitoring results and site management records shall be retained by the sediment manager in accordance with this section.

(1) ON-LINE SYSTEM. The department may develop an on-line system to receive and store the records.

(a) If an on-line voluntary system is established, a sediment manager who chooses to use the on-line system no longer needs to retain the records.

(b) If the department requires the use of the on-line system, the records no longer need to be retained by the sediment manager.

(2) RETENTION TIME. If an on-line system is not established, or if a voluntary on-line system is established and the sediment manager chooses not to use it, the records shall be retained for 20 years. These records shall be provided to the department upon request.

History: CR 08-111: cr. Register November 2009 No. 647, eff. 12-1-09.

NR 528.09 Department assistance. To assist sediment managers in making the determinations required in this chapter, the department may provide outreach, training, certification forms, written and on-line technical assistance documents or other resources deemed appropriate.

History: CR 08-111: cr. Register November 2009 No. 647, eff. 12-1-09.

NR 528.10 Sediment management program evaluation and compliance. The department may consult and work with those who implement accumulated sediment uses and are interested in substantiating the effectiveness, safety and environmental protectiveness of the chosen sediment management practice. Sediment managers shall provide data documenting their operation to assist with the evaluation upon request by the department. The department may also request information necessary to determine compliance with this chapter. Sediment managers shall provide site access to department staff upon request.

History: CR 08-111: cr. Register November 2009 No. 647, eff. 12-1-09.

PROJECT# 21-09
MATTHEW DRIVE POND RECONSTRUCTION

CITY OF DE PERE

ENGINEER DIVISION
925 S. SIXTH ST
DE PERE, WI 54115



SITE LOCATION MAP
N.T.S.



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SHEET NO.	DESCRIPTION
C	TITLE SHEET
1	EXISTING SITE CONDITIONS
2	OVERALL SITE PLAN
3	WEST POND DETAIL
4	EAST POND DETAIL
5	ACCESS ROAD AND DITCHING
6	MISCELLANEOUS DETAILS
7	EROSION CONTROL-INLET PROTECTION TYPES A,B,C,AND D
8	EROSION CONTROL-INLET PROTECTION TYPES D-HR AND TYPE D-M
9	EROSION CONTROL -- SHEET FLOW
10	EROSION CONTROL -- TRACK CONTROL PRACTICES
11	EROSION MAT -- SLOPE APPLICATION DETAIL
12	RESTORATION PLAN

CITY OF DE PERE
BOARD OF PUBLIC WORKS

12/16/2021
DATE

E.P. Lee
CITY ENGINEER

12/17/21
DATE

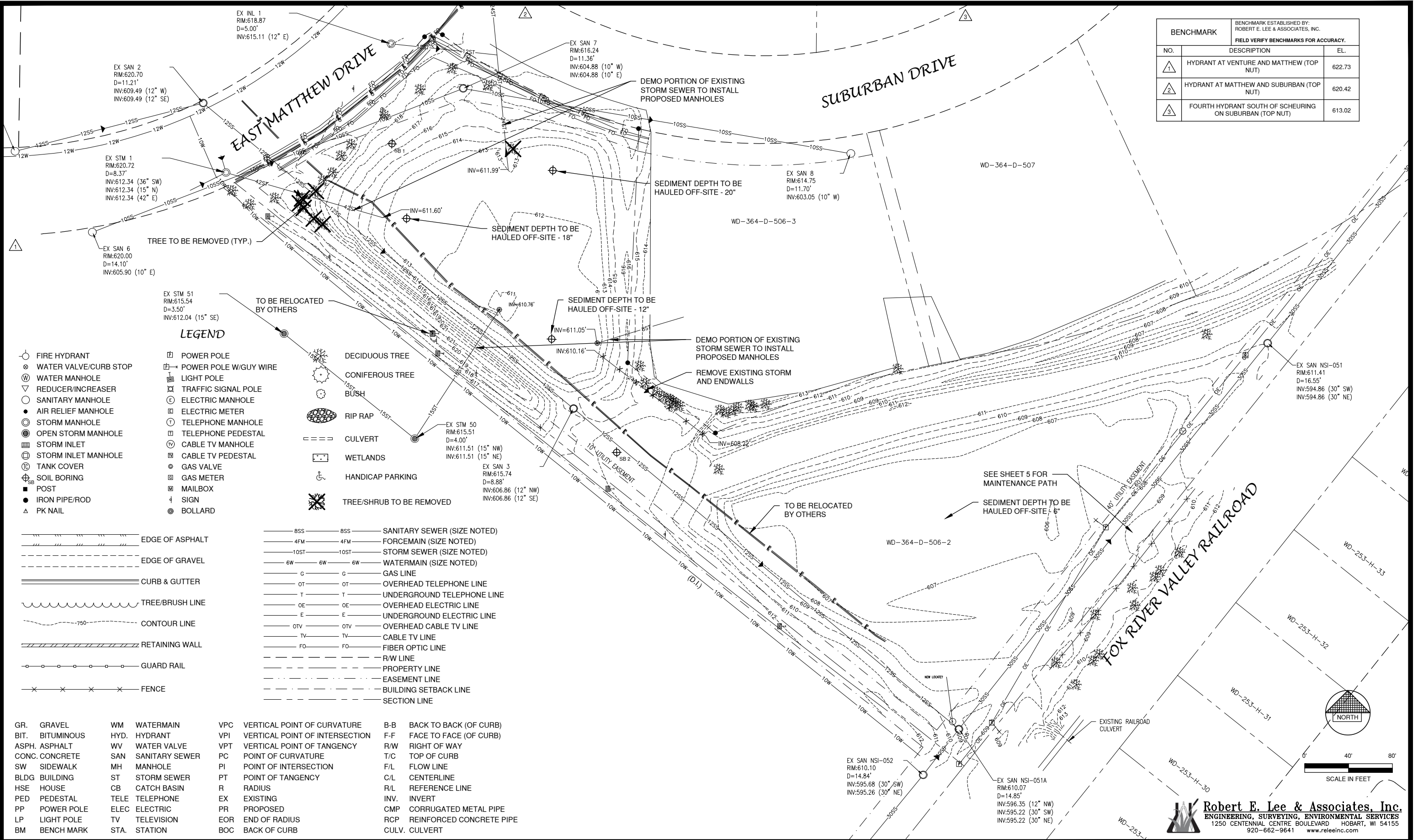
Mayor M. P. Rho
CITY ADMINISTRATOR

12/17/21
DATE

J. J. Boyd
MAYOR

STAMPS:





BENCHMARK		
BENCHMARK ESTABLISHED BY: ROBERT E. LEE & ASSOCIATES, INC.		
FIELD VERIFY BENCHMARKS FOR ACCURACY.		
NO.	DESCRIPTION	EL.
1	HYDRANT AT VENTURE AND MATTHEW (TOP NUT)	622.73
2	HYDRANT AT MATTHEW AND SUBURBAN (TOP NUT)	620.42
3	FOURTH HYDRANT SOUTH OF SCHEURING ON SUBURBAN (TOP NUT)	613.02

- FIRE HYDRANT

WATER VALVE/CURB STOP

WATER MANHOLE

REDUCER/INCREASER

SANITARY MANHOLE

AIR RELIEF MANHOLE

STORM MANHOLE

OPEN STORM MANHOLE

STORM INLET

STORM INLET MANHOLE

TANK COVER

SOIL BORING

POST

IRON PIPE/ROD

PK NAIL
- POWER POLE

POWER POLE W/GUY WIRE

LIGHT POLE

TRAFFIC SIGNAL POLE

ELECTRIC MANHOLE

ELECTRIC METER

TELEPHONE MANHOLE

TELEPHONE PEDESTAL

CABLE TV MANHOLE

CABLE TV PEDESTAL

GAS VALVE

GAS METER

MAILBOX

SIGN

BOLLARD
- DECIDUOUS TREE

CONIFEROUS TREE

BUSH

RIP RAP

CULVERT

WETLANDS

HANDICAP PARKING

TREE/SHRUB TO BE REMOVED

- EDGE OF ASPHALT

EDGE OF GRAVEL

CURB & GUTTER

TREE/BRUSH LINE

CONTOUR LINE

RETAINING WALL

GUARD RAIL

FENCE
- 8SS

SANITARY SEWER (SIZE NOTED)

4FM

FORCEMAIN (SIZE NOTED)

10ST

STORM SEWER (SIZE NOTED)

6W

WATERMAIN (SIZE NOTED)

G

GAS LINE

OT

OVERHEAD TELEPHONE LINE

T

UNDERGROUND TELEPHONE LINE

OE

OVERHEAD ELECTRIC LINE

E

UNDERGROUND ELECTRIC LINE

OTV

OVERHEAD CABLE TV LINE

TV

CABLE TV LINE

FO

FIBER OPTIC LINE

R/W LINE

PROPERTY LINE

EASEMENT LINE

BUILDING SETBACK LINE

SECTION LINE

- GR. GRAVEL

WM WATERMAIN

VPC VERTICAL POINT OF CURVATURE

B-B BACK TO BACK (OF CURB)

BIT. BITUMINOUS

HYD. HYDRANT

VPI VERTICAL POINT OF INTERSECTION

F-F FACE TO FACE (OF CURB)

ASPH. ASPHALT

WV WATER VALVE

VPT VERTICAL POINT OF TANGENCY

R/W RIGHT OF WAY

CONC. CONCRETE

SAN SANITARY SEWER

PC POINT OF CURVATURE

T/C TOP OF CURB

SW SIDEWALK

MH MANHOLE

PI POINT OF INTERSECTION

F/L FLOW LINE

BLDG BUILDING

ST STORM SEWER

PT POINT OF TANGENCY

C/L CENTERLINE

HSE HOUSE

CB CATCH BASIN

R RADIUS

R/L REFERENCE LINE

PED PEDESTAL

TELE TELEPHONE

EX EXISTING

INV. INVERT

PP POWER POLE

ELEC ELECTRIC

PR PROPOSED

CMP CORRUGATED METAL PIPE

LP LIGHT POLE

TV TELEVISION

EOR END OF RADIUS

RCP REINFORCED CONCRETE PIPE

BM BENCHMARK

STA. STATION

BOC BACK OF CURB

CULV. CULVERT

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LEGEND

- DRAINAGE SWALE
- DRAINAGE DIVIDE
- FLOW ARROW
- SILT FENCE (PER WDNR TECHNICAL STANDARD 1056)
- DITCH CHECK (PER WDNR TECHNICAL STANDARD 1062)
- TRACKING PAD (PER WDNR TECHNICAL STANDARD 1057)
- EROSION MAT (PER WDNR TECHNICAL STANDARD 1053)
- INLET PROTECTION (PER WDNR TECHNICAL STANDARD 1060)

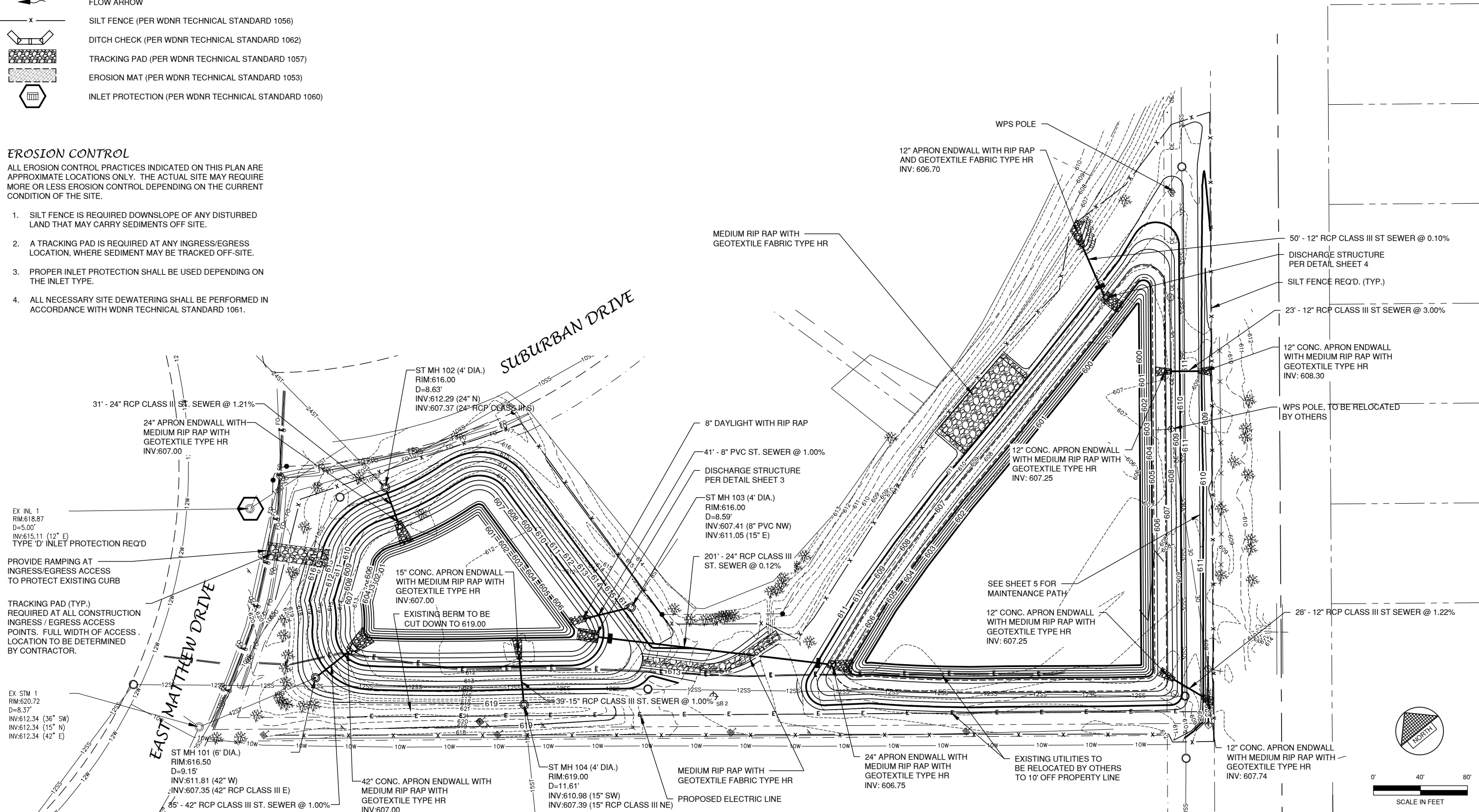
EROSION CONTROL

ALL EROSION CONTROL PRACTICES INDICATED ON THIS PLAN ARE APPROXIMATE LOCATIONS ONLY. THE ACTUAL SITE MAY REQUIRE MORE OR LESS EROSION CONTROL DEPENDING ON THE CURRENT CONDITION OF THE SITE.

- SILT FENCE IS REQUIRED DOWNSLOPE OF ANY DISTURBED LAND THAT MAY CARRY SEDIMENTS OFF SITE.
- A TRACKING PAD IS REQUIRED AT ANY INGRESS/EGRESS LOCATION, WHERE SEDIMENT MAY BE TRACKED OFF-SITE.
- PROPER INLET PROTECTION SHALL BE USED DEPENDING ON THE INLET TYPE.
- ALL NECESSARY SITE DEWATERING SHALL BE PERFORMED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1061.



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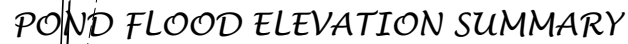
CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4060 FAX 920-339-4071

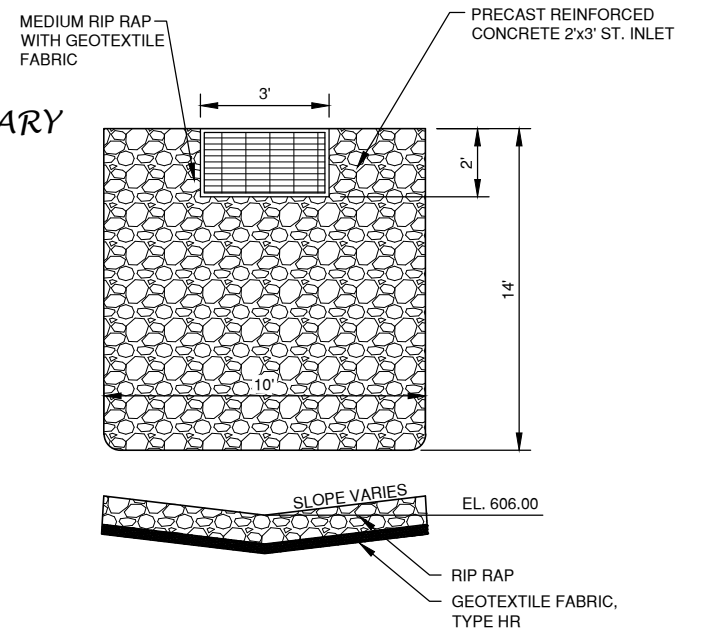
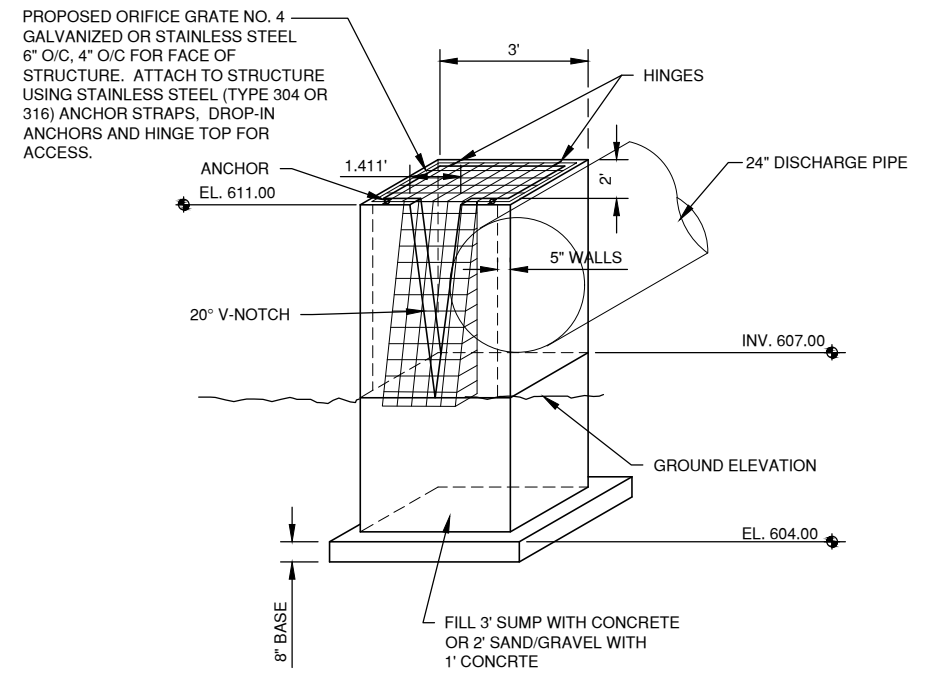
OVERALL SITE PLAN

NAME:	MATTHEW DRIVE POND RECONSTRUCTION	BY	DATE	REVISIONS / ISSUES	
PROJECT #	21-09	SURVEYED		NO.	DATE
		DRAWN	BDR	05-2021	
		DESIGNED	BDR	05-2021	
		CHECKED			
		REMARKS			

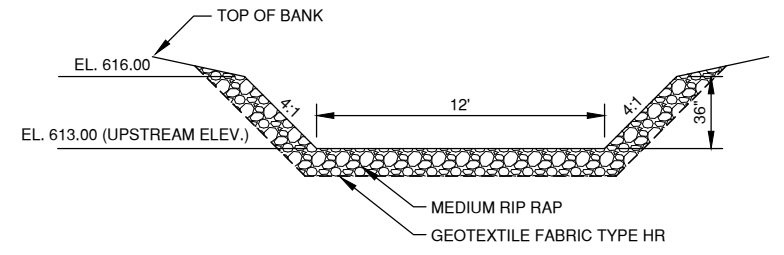
PAGE NO.
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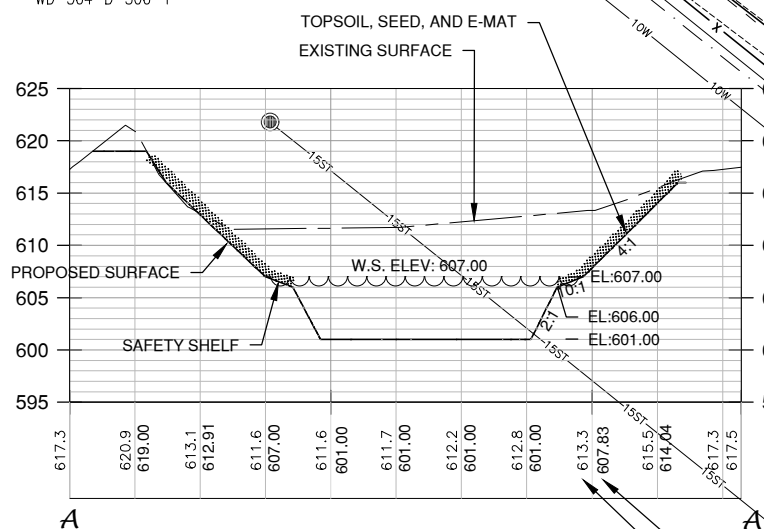
YEAR STORM	PEAK WATER SURFACE ELEVATION
1-YEAR	611.39
2-YEAR	611.93
10-YEAR	613.00
100-YEAR	615.58



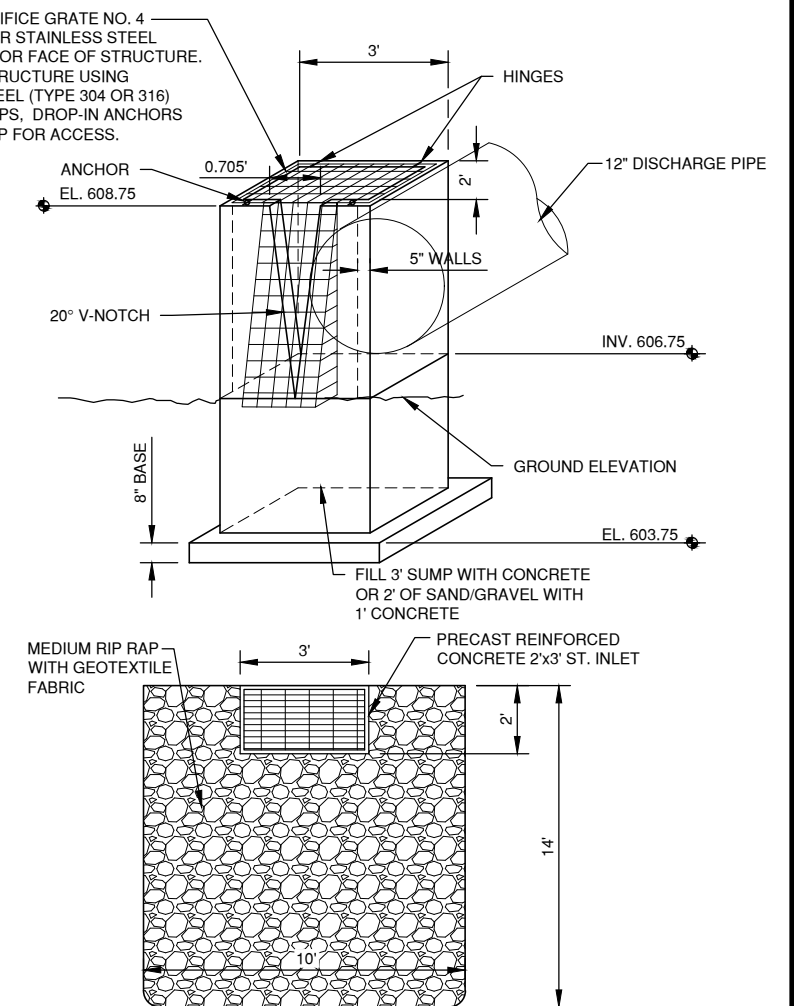
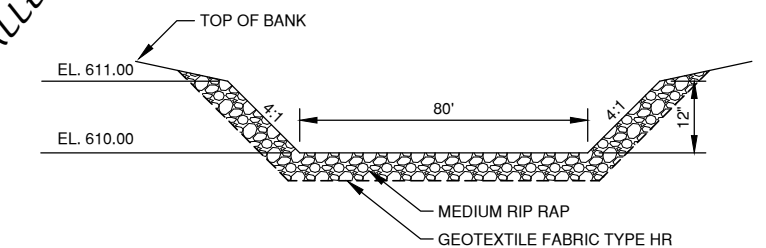
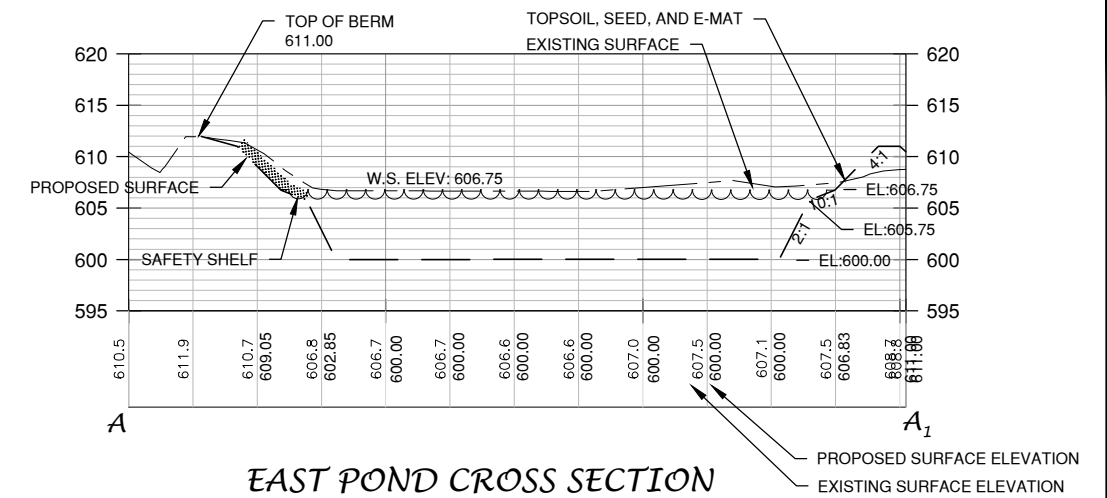
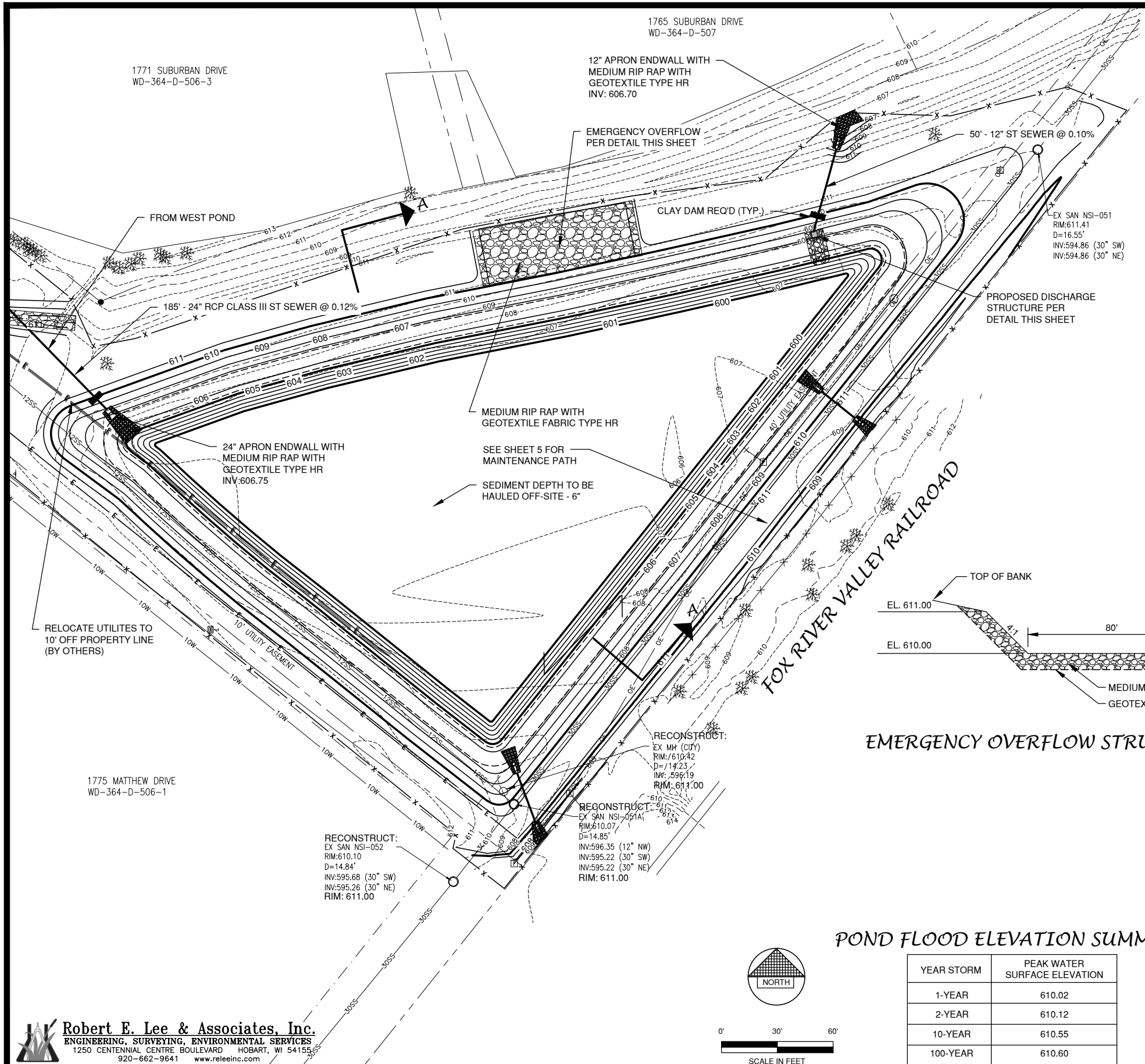
DISCHARGE STRUCTURE DETAIL



EMERGENCY OVERFLOW STRUCTURE DETAIL

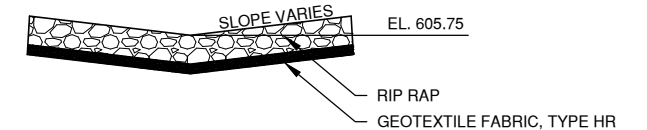


WEST POND CROSS SECTION



POND FLOOD ELEVATION SUMMARY

YEAR STORM	PEAK WATER SURFACE ELEVATION
1-YEAR	610.02
2-YEAR	610.12
10-YEAR	610.55
100-YEAR	610.60



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OFFICE 920-339-4060 FAX 920-339-4071

EAST POND DETAIL

NAME: MATTHEW DRIVE POND
RECONSTRUCTION

PROJECT # 21-09

BY

DATE

SURVEYED

DRAWN

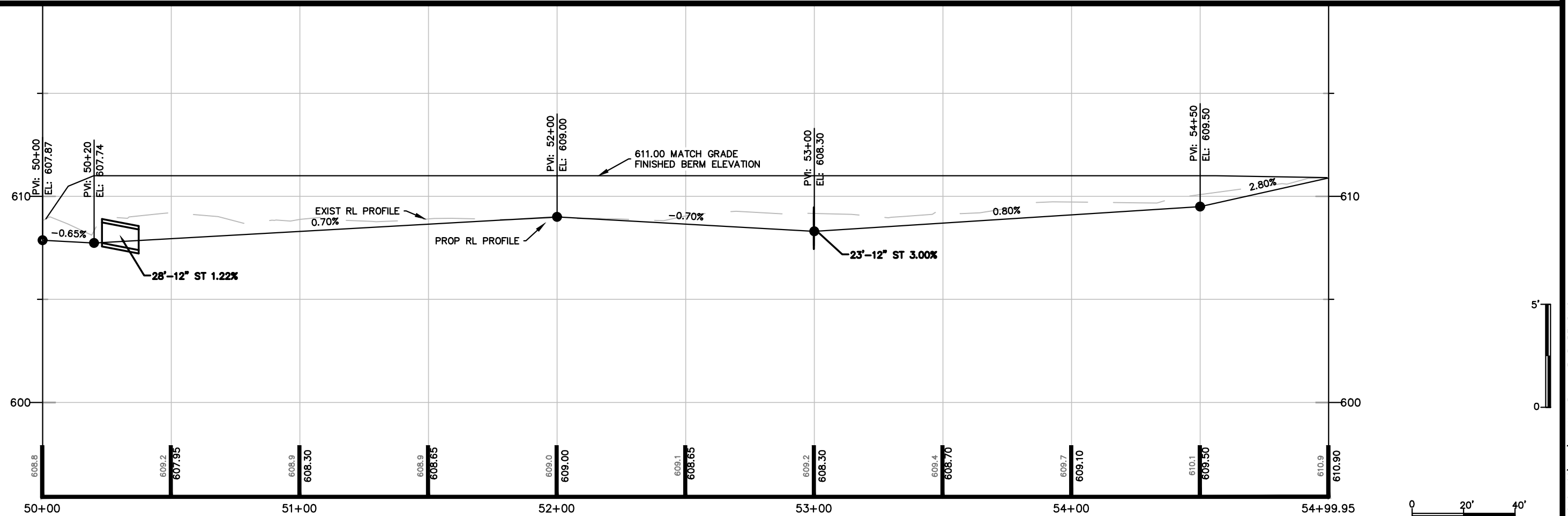
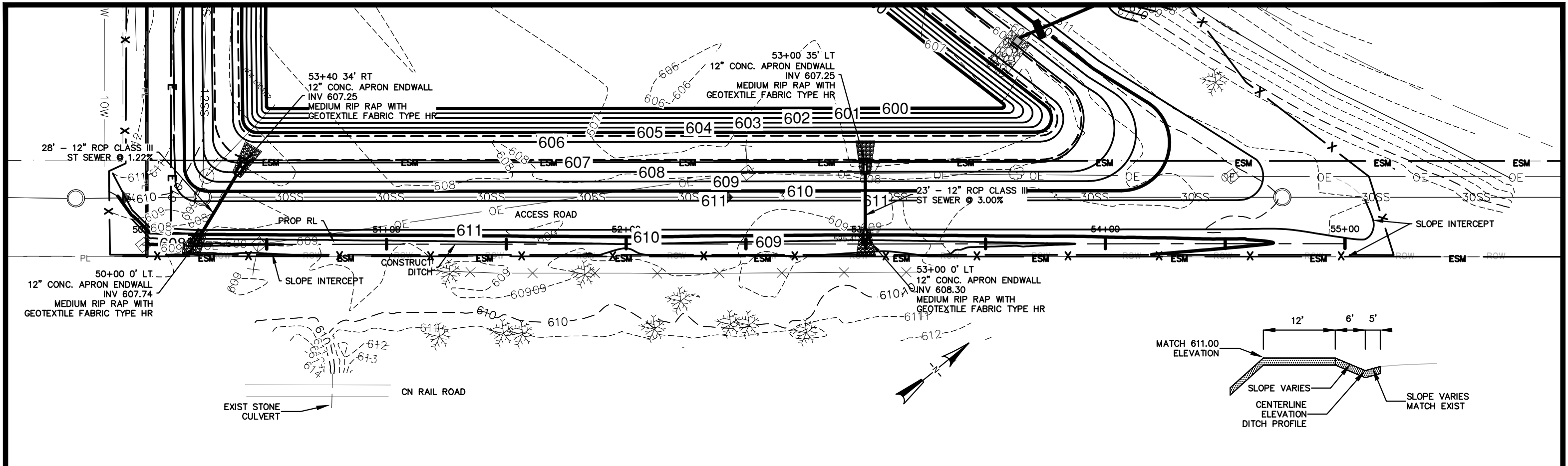
DESIGNED

CHECKED

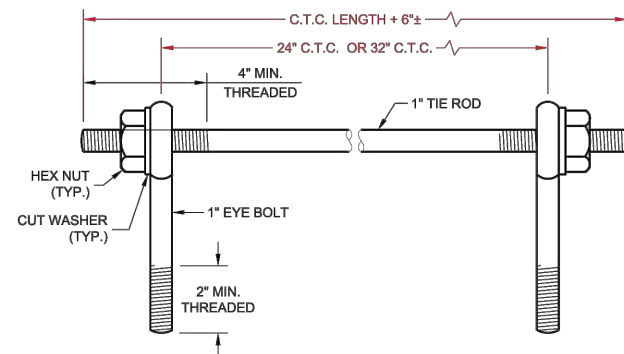
DISCHARGE STRUCTURE DETAIL

REVISIONS / ISSUES			
NO.	DATE	BY	REMARKS

PAGE
NO.
4

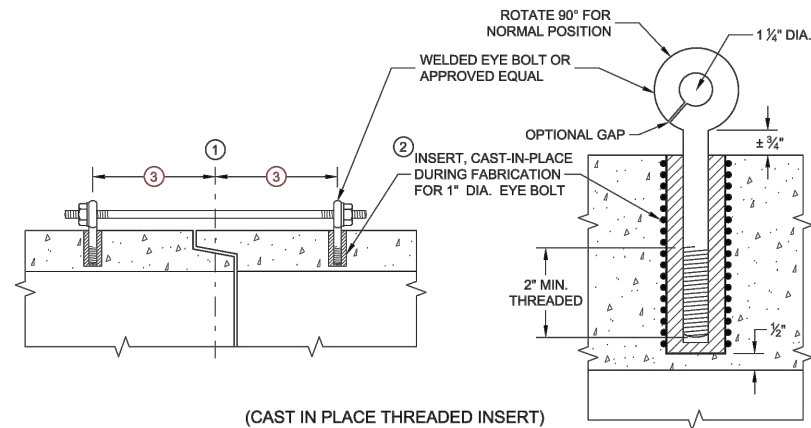


SDD 08F04 Joint Ties for Concrete Pipe and Concrete Collar Detail



EYE BOLTS AND TIE ROD

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



(CAST IN PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

GENERAL NOTES

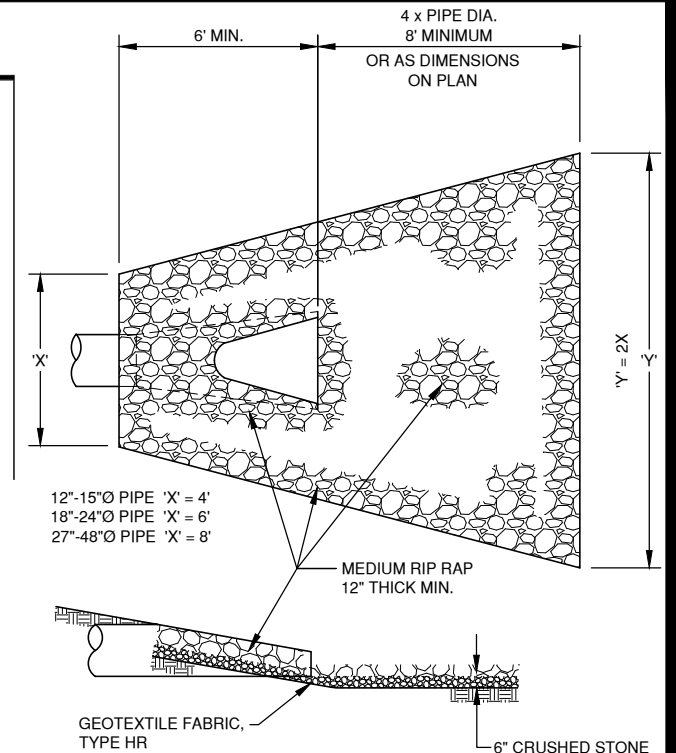
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

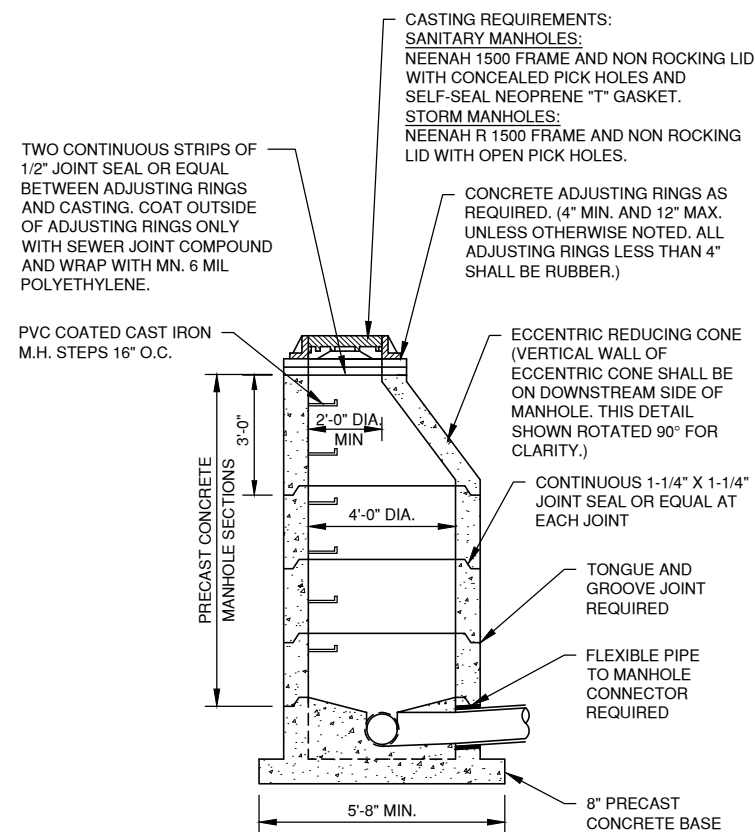
DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

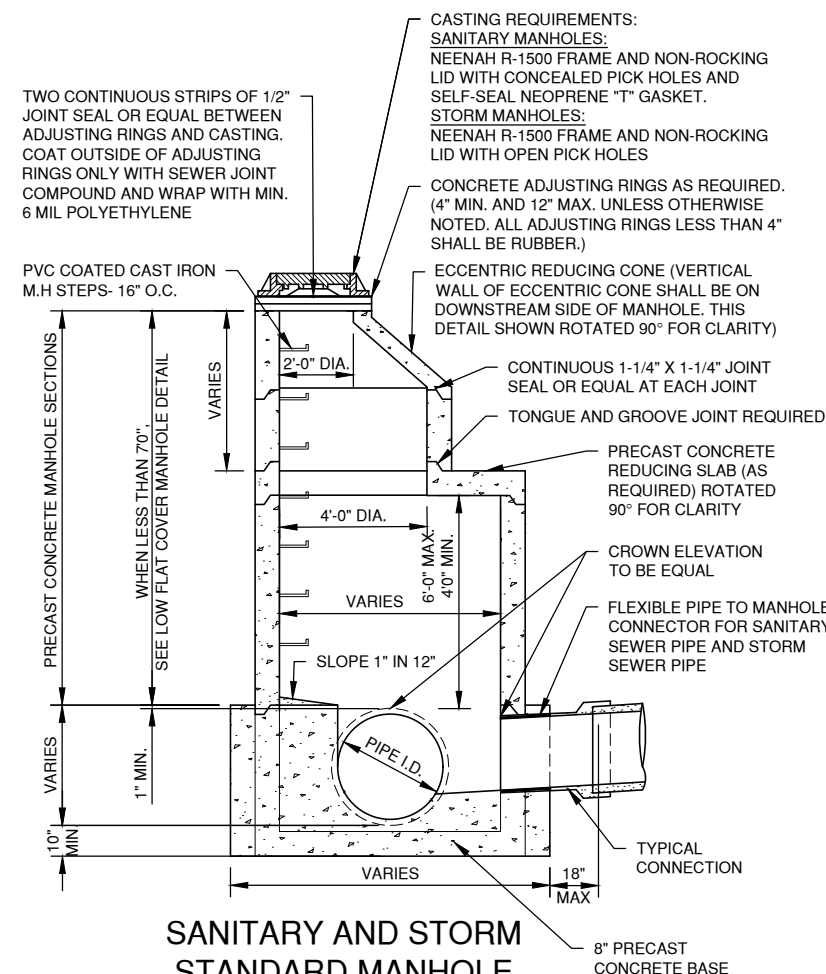
- ① CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.



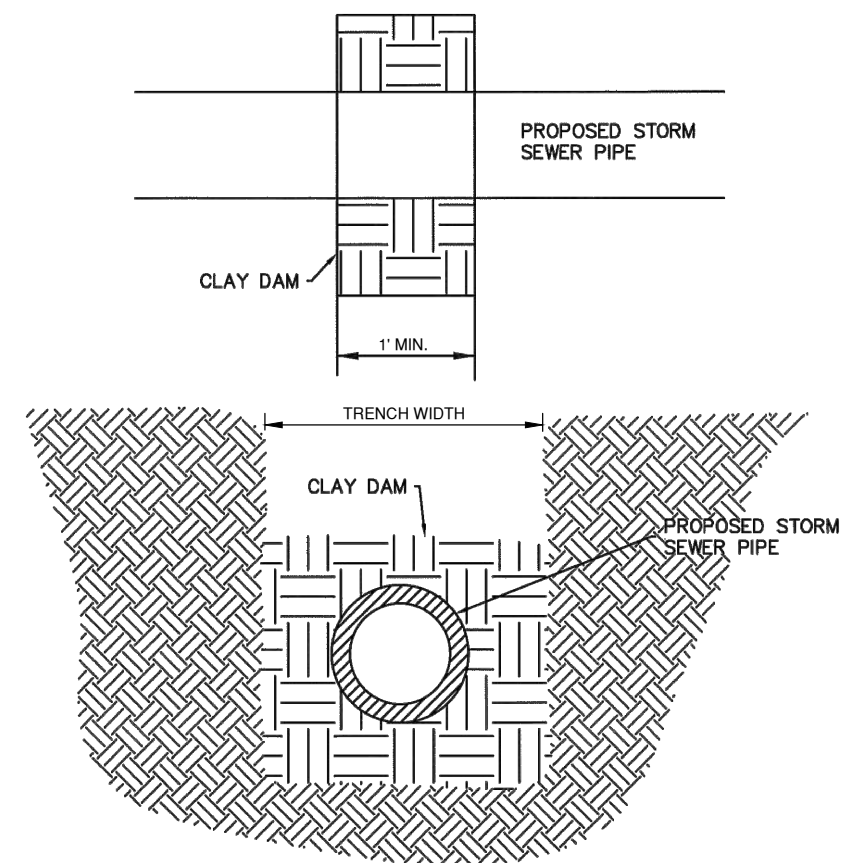
ENDWALL RIP RAP DETAIL



SANITARY AND STORM STANDARD MANHOLE 8"-24" (INCLUSIVE)



SANITARY AND STORM
STANDARD MANHOLE
27" - 60" (INCLUSIVE)



CLAY DAM DETAIL

N.T.S.



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MISCELLANEOUS DETAIL

NAME: MATTHEW DRIVE POND RECONSTRUCTION	BY	DATE	REVISIONS / ISSUES			
			NO.	DATE	BY	REMARKS
PROJECT # 21-09	SURVEYED					
	DRAWN	BDR	05-2021			
	DESIGNED	BDR	05-2021			
	CHECKED					

PAGE
NO.
6

INLET PROTECTION NOTES:

INLET PROTECTION DEVICES SHALL BE IN ACCORDANCE WITH WDNr TECHNICAL STANDARD 1060, STORM DRAIN INLET PROTECTION FOR CONSTRUCTION SITES.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE WDOT PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

MAINTENANCE NOTES:

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

INSTALLATION NOTES:

TYPE "B" AND "C"

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE "D"

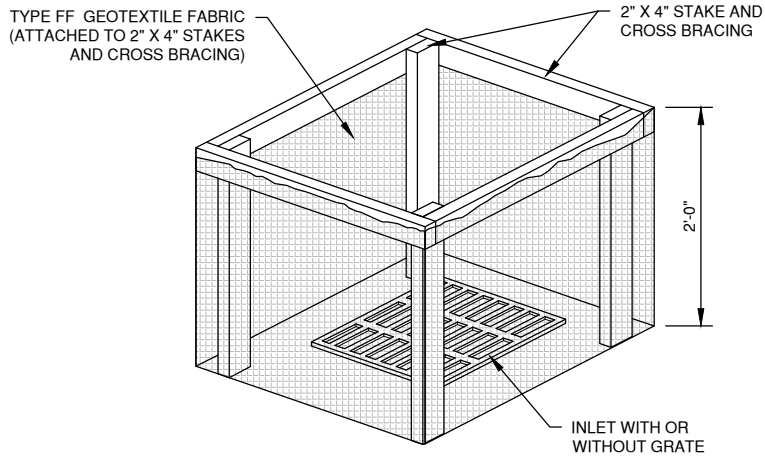
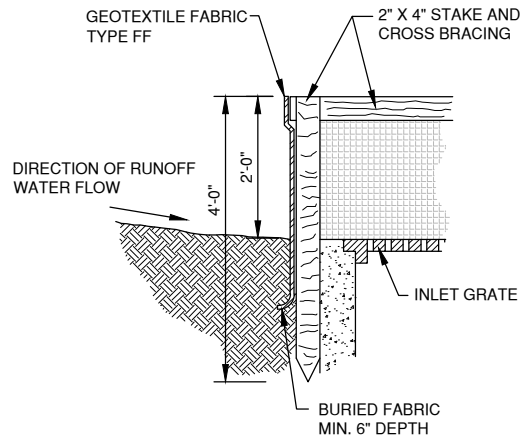
DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30" MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

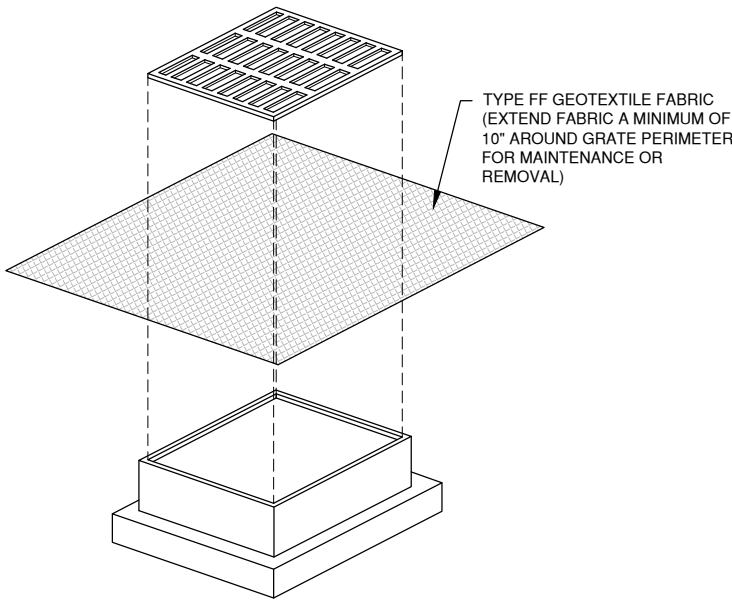
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY, CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE, THE TIES SHALL BE PLACED AT THE MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.

NOTES:

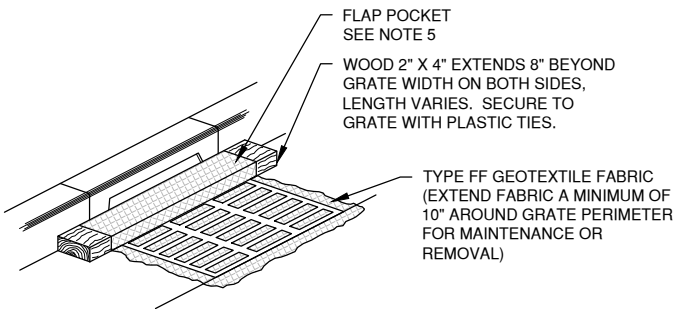
1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF THE OUTSIDE OF FILTER BAG. FRONT, BACK AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" X 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.



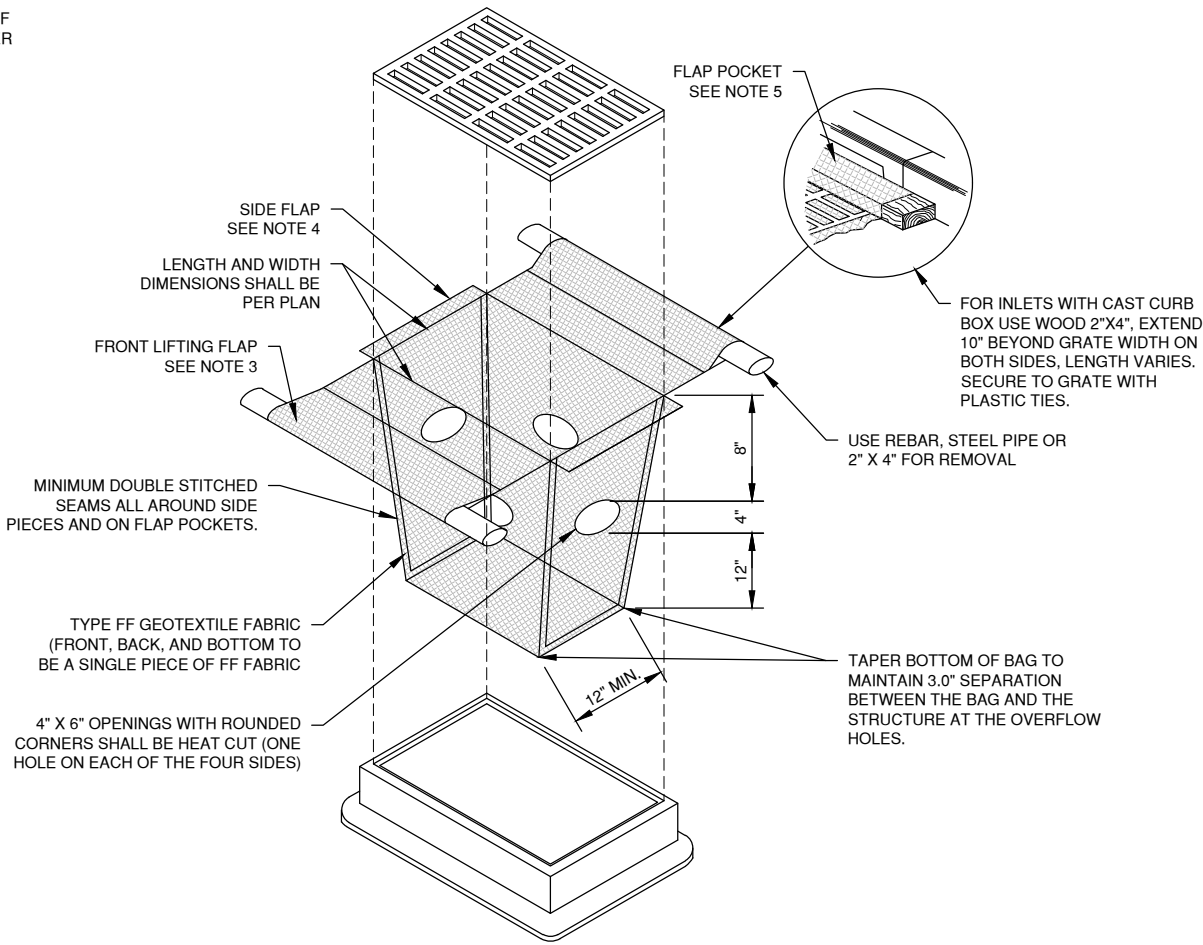
INLET PROTECTION, TYPE A



**INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)**
(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



**INLET PROTECTION, TYPE C
(WITH CURB BOX)**



INLET PROTECTION, TYPE D
(CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES)

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**EROSION CONTROL - INLET
PROTECTION TYPES A, B, C, AND D**

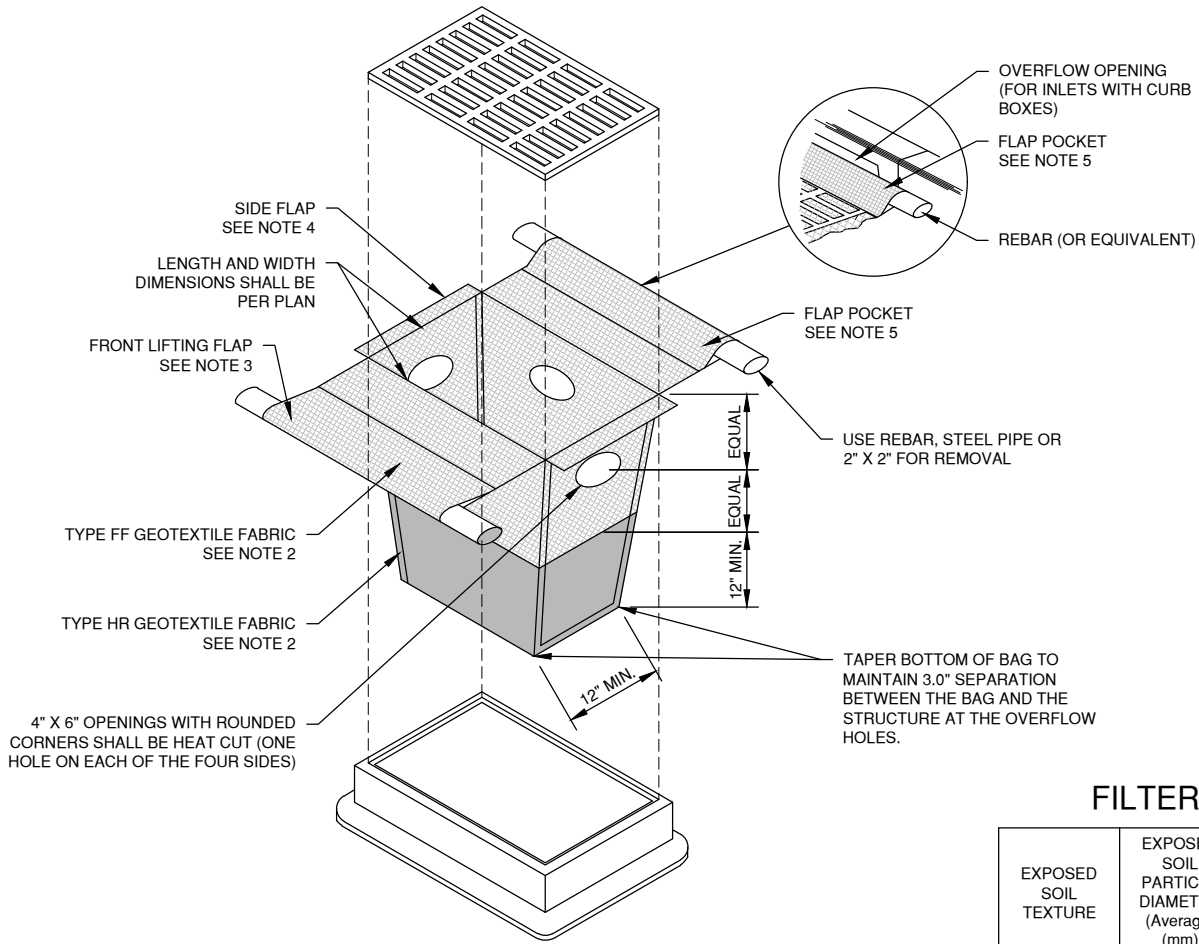
NAME:	BY	DATE	REVISIONS / ISSUES			
			NO.	DATE	BY	REMARKS
PROJECT # 21-09	SURVEYED					
	DRAWN	BDR	05-2021			
	DESIGNED	BDR	05-2021			
	CHECKED					

NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS AND TOP HALF OF FILTER BAG. GEOTEXTILE FABRIC TYPE HR FOR BOTTOM HALF OF FILTER BAG. FRONT, BACK AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" X 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.



INLET PROTECTION, TYPE D-HR
(CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES)

FILTER FABRIC TYPE

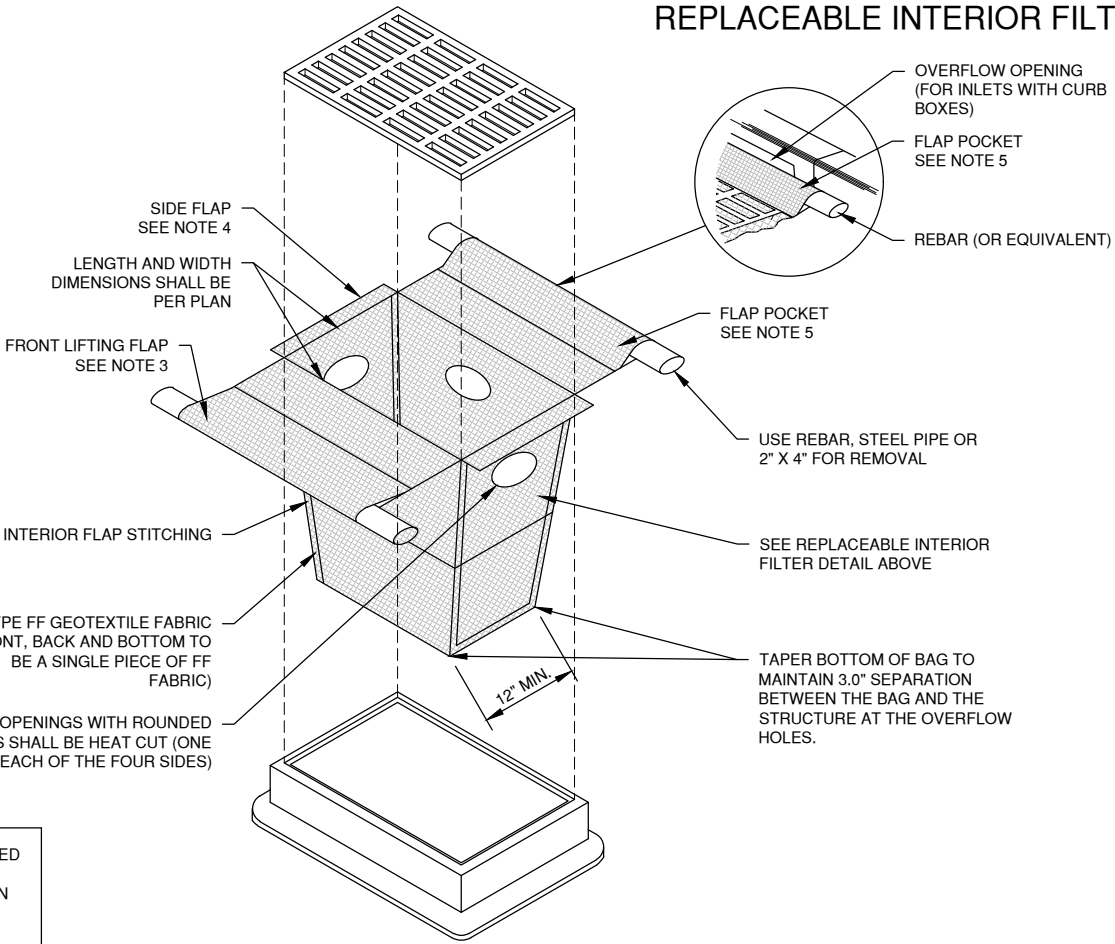
EXPOSED SOIL TEXTURE	EXPOSED SOIL PARTICLE DIAMETER (Average) (mm)	FILTER FABRIC TYPE*	RECOMMENDED INLET PROTECTION DEVICE TYPE
COARSE (SAND)	≥0.0625	FF	D, D-M
MEDIUM (SILT LOAM)	0.0624 - 0.005	DF	D, D-M
FINE (CLAY)	≤ 0.004	R	D-M
		HR	D-HR

* DF, R OR HR FILTERS MAY BE USED WHERE FF IS THE REQUIRED MINIMUM STANDARD. R OR HR MAY BE USED WHERE DF IS THE REQUIRED MINIMUM STANDARD.

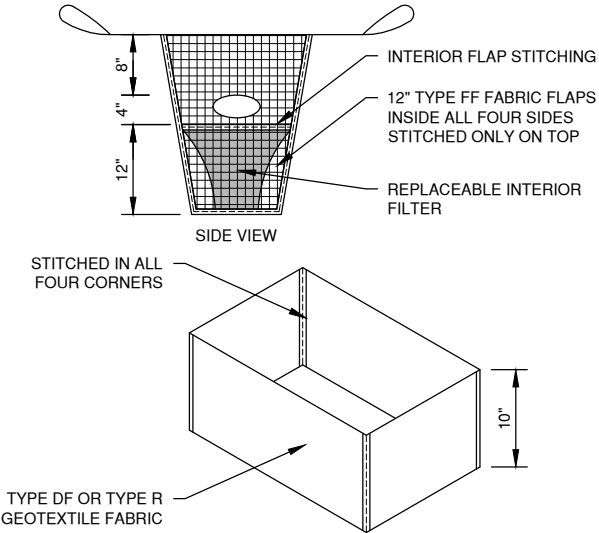
** FOLLOW DESIGN CRITERIA OF WDNR TECHNICAL STANDARD 1060

NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG. FRONT, BACK AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" X 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.



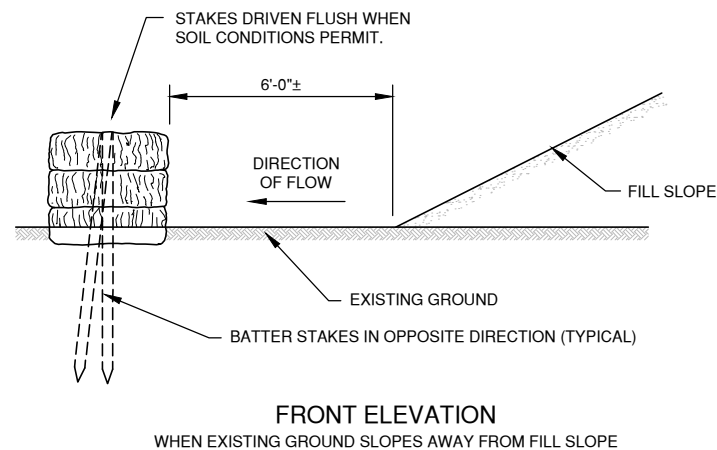
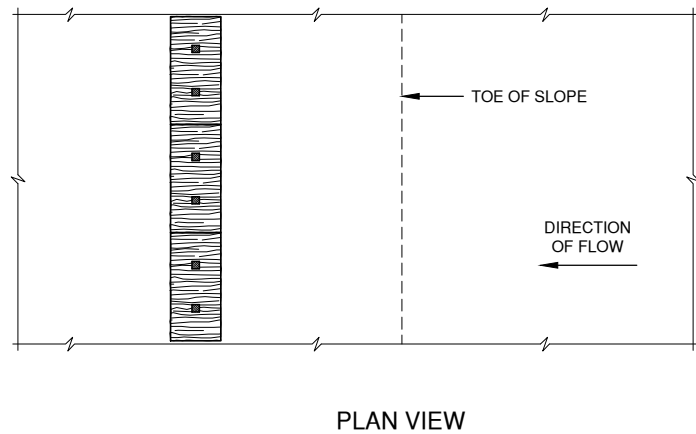
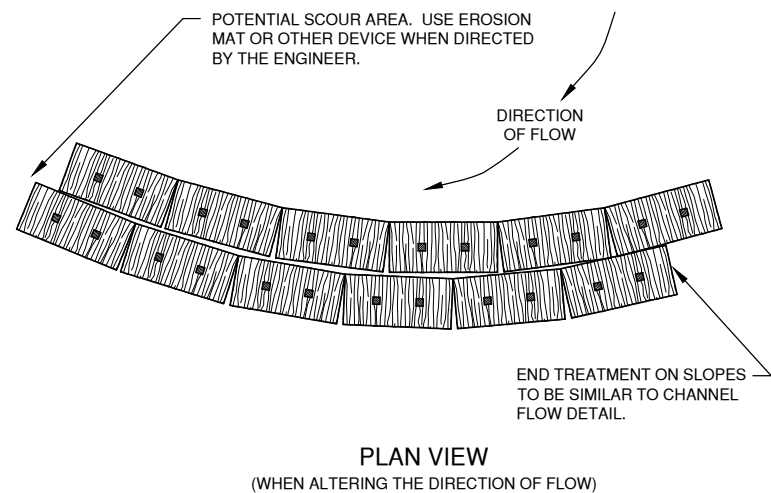
INLET PROTECTION, TYPE D-M
(CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES)



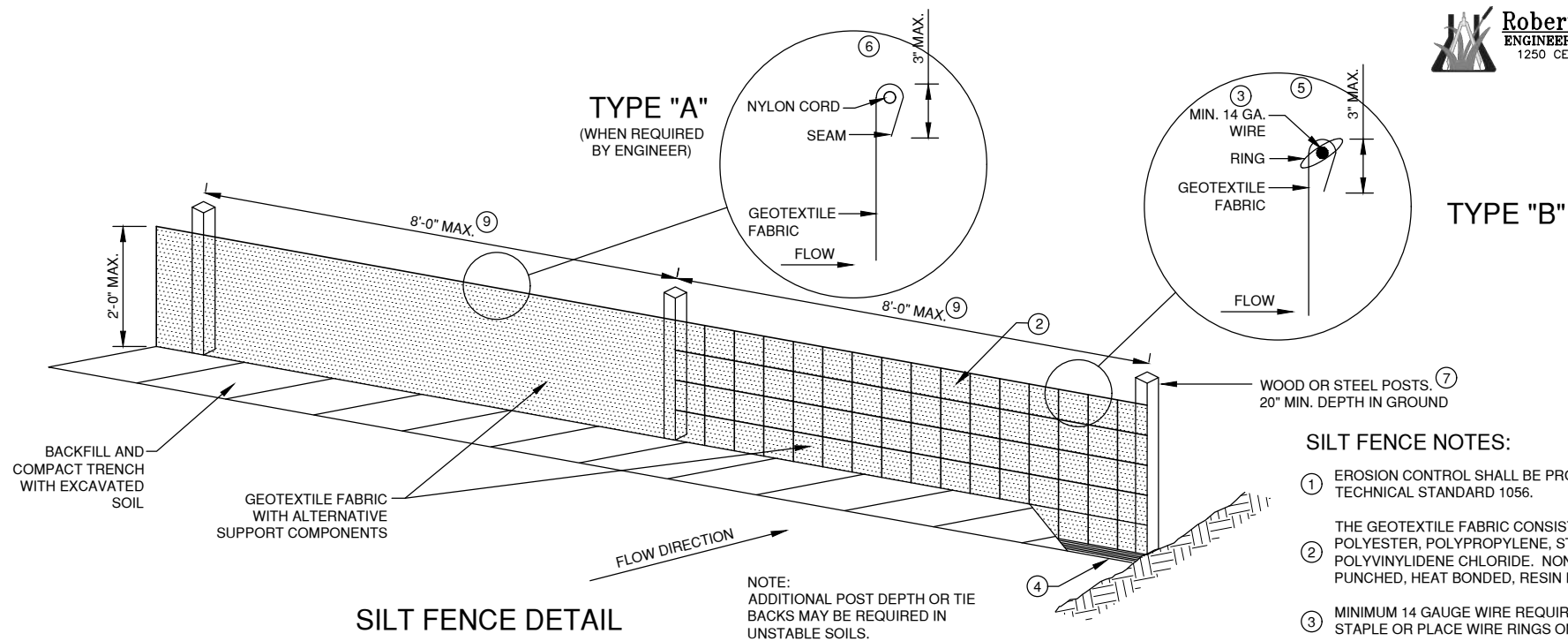
REPLACEABLE INTERIOR FILTER



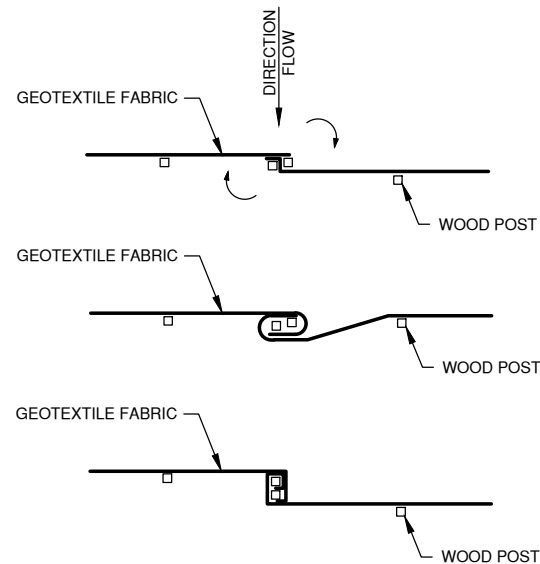
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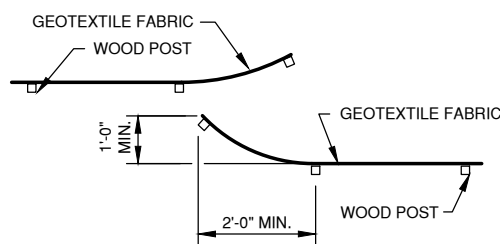
EROSION BALES FOR SHEET FLOW



SILT FENCE DETAIL



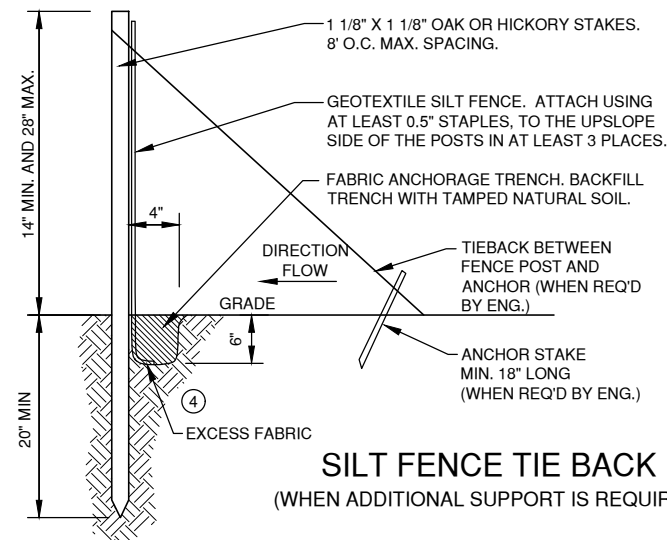
TWIST METHOD ⑧



HOOK METHOD ⑧

JOINING TWO LENGTHS OF SILT FENCE

SILT FENCE TIE BACK (WHEN ADDITIONAL SUPPORT IS REQUIRED)



EROSION CONTROL SHEET FLOW NOTES:

- ANY SOIL STOCKPILED THAT REMAINS FOR MORE THAN 7 DAYS, SHALL BE COVERED OR TREATED WITH STABILIZATION PRACTICES SUCH AS TEMPORARY OR PERMANENT SEEDING AND MULCHING.
- A MINIMUM OF 4" OF TOPSOIL MUST BE APPLIED TO ALL AREAS TO BE SEED OR SODDED.
- ALL WASTE AND UNUSED BUILDING MATERIALS (INCLUDING GARBAGE, DEBRIS, CLEANING WASTES, WASTEWATER, TOXIC MATERIALS, OR HAZARDOUS MATERIALS) SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO BE CARRIED OFF-SITE BY RUNOFF OR WIND.
- ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION WORK OR A STORM EVENT SHALL BE CLEANED UP BY THE END OF EACH DAY. **FLUSHING SHALL NOT BE ALLOWED.**
- ANY SOIL EROSION THAT OCCURS AFTER FINAL GRADING AND/OR THE APPLICATION OF STABILIZATION MEASURES MUST BE REPAIRED AND THE STABILIZATION WORK REDONE.
- FOR ANY DISTURBED AREA THAT REMAINS INACTIVE FOR GREATER THAN 7 WORKING DAYS, OR WHERE GRADING WORK EXTENDS BEYOND THE PERMANENT SEEDING DEADLINES, THE SITE MUST BE TREATED WITH TEMPORARY STABILIZATION MEASURES SUCH AS SOIL TREATMENT, TEMPORARY SEEDING AND/OR MULCHING.
- ALL TEMPORARY EROSION CONTROL PRACTICES SHALL BE MAINTAINED UNTIL THE SITE IS STABILIZED WITH 70% VEGETATION AND A NOTICE OF TERMINATION HAS BEEN APPROVED BY THE WDNR.
- WIND EROSION SHALL BE KEPT TO A MINIMUM DURING CONSTRUCTION. WATERING, MULCH OR A TACKING AGENT MAY NEED TO BE UTILIZED TO PROTECT NEARBY RESIDENCES/WATER RESOURCES.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL THE EROSION CONTROL MEASURES IN CONFORMANCE WITH THE WDNR CONSERVATION PRACTICE STANDARDS LATEST EDITION.
- UPON COMPLETION OF STORM INLET CONSTRUCTION, INSTALL STORM DRAIN INLET PROTECTION FOR CONSTRUCTION SITE AS SPECIFIED.
- FINE SEDIMENT ACCUMULATIONS SHALL BE CLEANED FROM STREETS, PRIVATE DRIVES, OR PARKING AREAS BY MANUAL OR MECHANICAL SWEEPING A MINIMUM OF ONCE A WEEK AND BEFORE ALL IMMINENT RAINS
- EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS OF RAINFALL OF 0.5" OR MORE.

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EROSION CONTROL - SHEET FLOW

NAME: MATTHEW DRIVE POND RECONSTRUCTION

PROJECT # 21-09

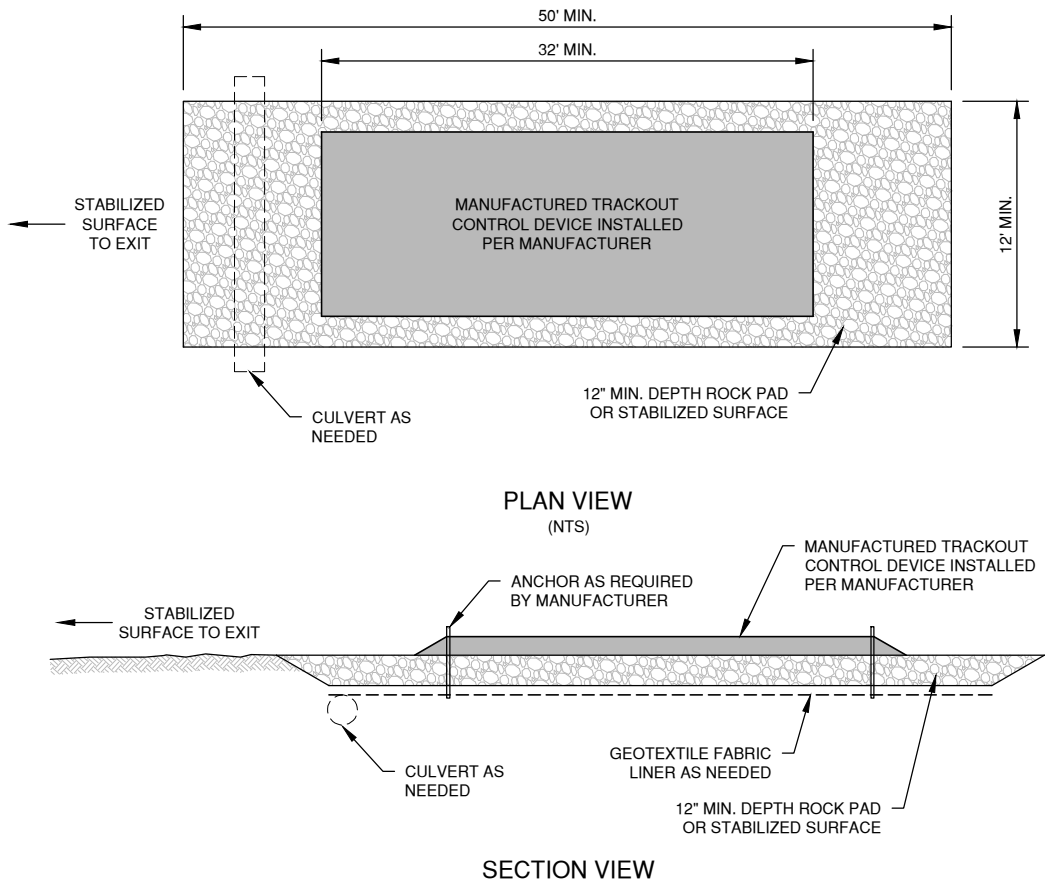
BY DATE

SURVEYED
DRAWN BDR 05-2021
DESIGNED BDR 05-2021
CHECKED

REVISIONS / ISSUES

NO.	DATE	BY	REMARKS

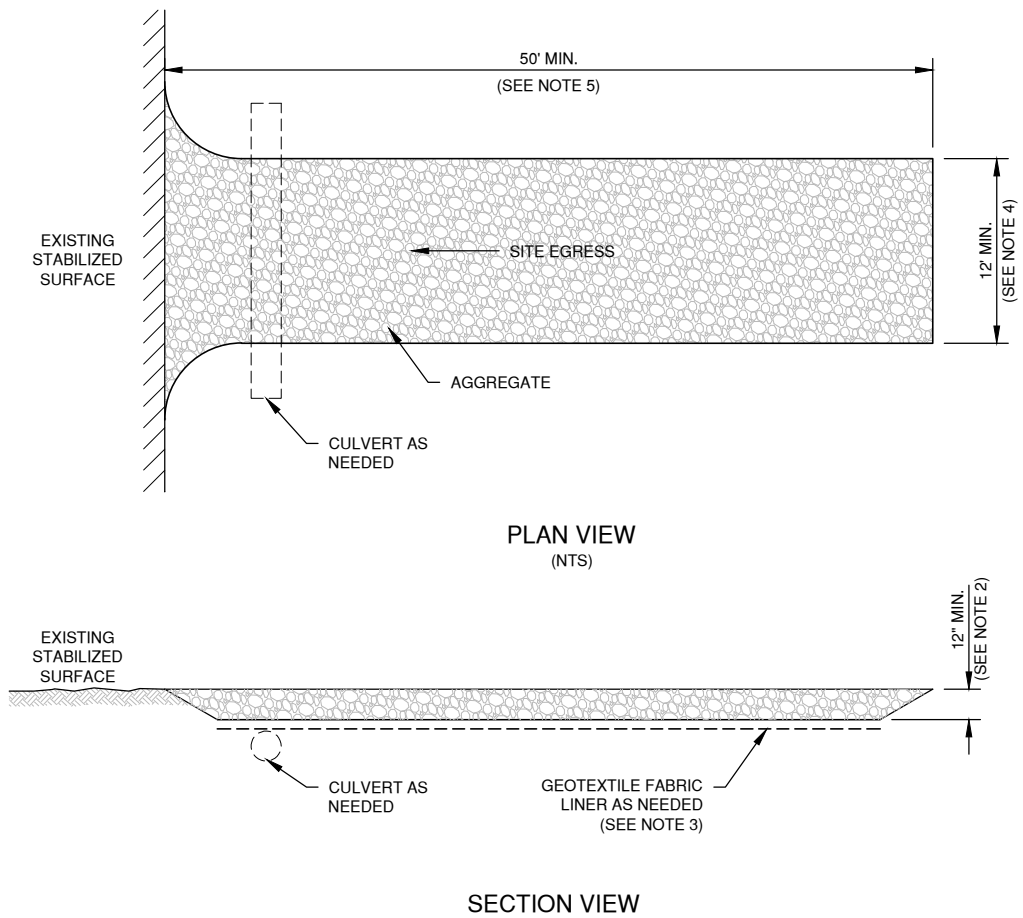
* TRACKOUT CONTROL TO BE PROVIDED PER DETAILS BELOW AND IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1057



NOTES:

1. THIS DETAIL IS PROVIDED AS AN EXAMPLE. COMPLY WITH MANUFACTURER'S SPECIFICATIONS WHILE ALSO MEETING THE MINIMUM MANUFACTURED TRACKING PAD LENGTH AND WIDTH DESCRIBED IN THIS TECHNICAL STANDARD.
2. INSTALL SUCH THAT RUNOFF FLOWS TO AN APPROVED TREATMENT PRACTICE.
3. A THINNER STONE LAYER OR OTHER STABLE SURFACE MAY BE ACCEPTABLE SUCH THAT RUTTING IS MINIMIZED AS VEHICLES MOUNT OR DISMOUNT FROM THE MANUFACTURERS TRACKOUT CONTROL DEVICE.
4. SELECT FABRIC TYPE BASED ON SOIL CONDITIONS AND VEHICLES LOADING.
5. DIRECT ALL EXISTING VEHICLES OVER MANUFACTURED TRACKOUT CONTROL DEVICE. STONE TRACKING PAD INSTALLATION ACROSS REMAINING ACCESS WIDTH IS RECOMMENDED. A 12' MINIMUM CAN BE USED WHEN EXITING TRAFFIC IS RESTRICTED TO A DEDICATED EGRESS LANE.
6. IF MINIMUM INSTALLATION LENGTH IS NOT POSSIBLE DUE TO SITE GEOMETRY, INSTALL THE MAXIMUM LENGTH PRACTICABLE AND SUPPLEMENT WITH ADDITIONAL PRACTICES AS NEEDED.
7. ACCOMMODATE EXITING VEHICLES IN EXCESS OF MANUFACTURED TRACKOUT CONTROL DEVICE WEIGHT CAPACITY WITH OTHER TREATMENT PRACTICES.

MANUFACTURED TRACKOUT CONTROL DETAIL



NOTES:

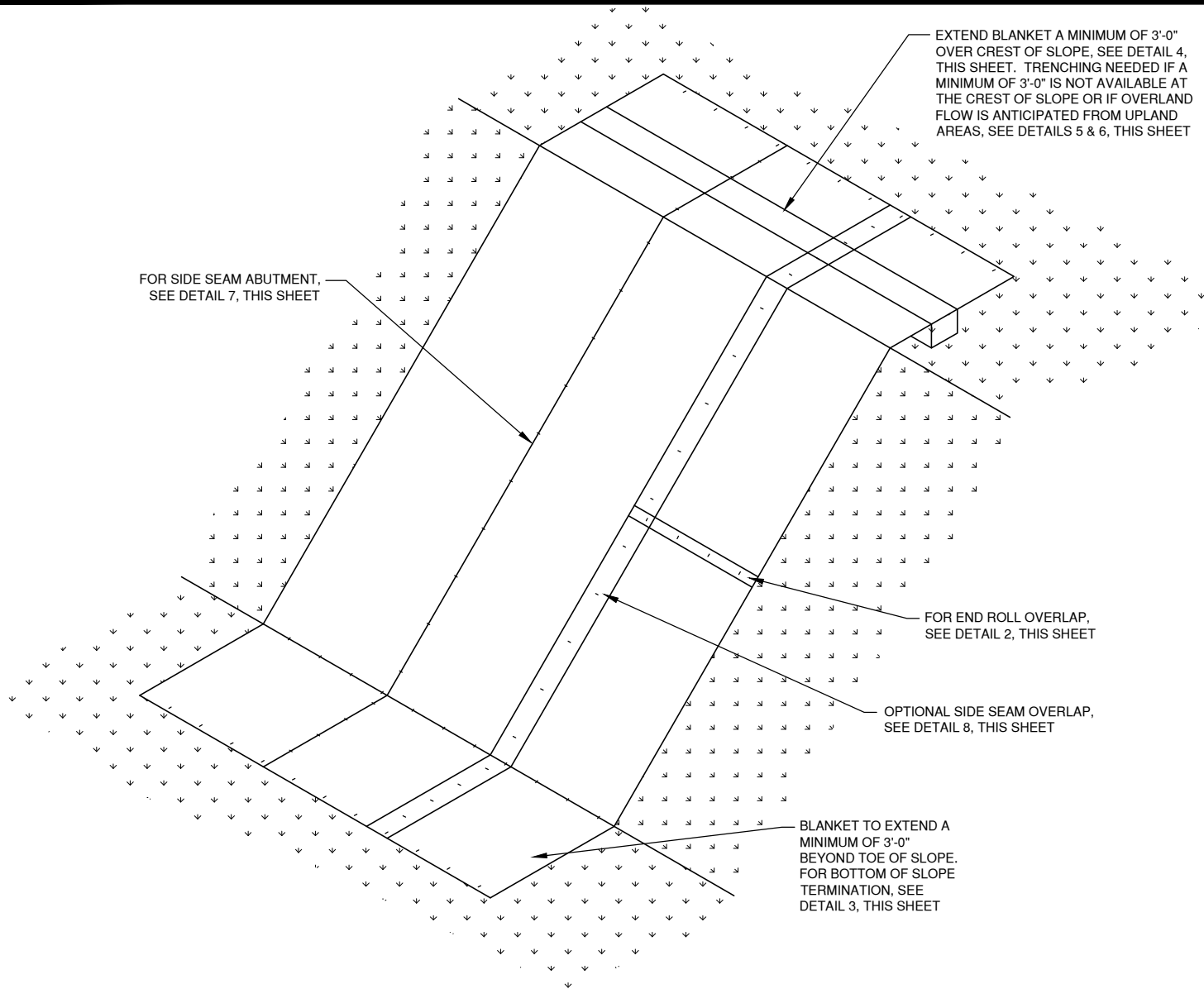
1. USE HARD, DURABLE, ANGULAR STONE OR RECYCLED CONCRETE, MEETING THE FOLLOWING GRADATION:

SIEVE SIZE:	PERCENT BY WEIGHT PASSING:
3"	100
2 1/2"	90-100
1 1/2"	25-60
3/4"	0-20
3/8"	0-5
2. SLOPE THE STONE TRACKING PAD IN A MANNER TO DIRECT RUNOFF TO AN APPROVED TREATMENT PRACTICE.
3. SELECT FABRIC TYPE BASED ON SOIL CONDITIONS AND VEHICLES LOADING.
4. INSTALL TRACKING PAD ACROSS FULL WIDTH OF THE ACCESS POINT, OR RESTRICT EXISTING TRAFFIC TO A DEDICATED EGRESS LANE AT LEAST 12 FEET WIDE ACROSS THE TOP OF THE PAD.
5. IF A 50' PAD LENGTH IS NOT POSSIBLE DUE TO SITE GEOMETRY, INSTALL THE MAXIMUM LENGTH PRACTICABLE AND SUPPLEMENT WITH ADDITIONAL PRACTICES AS NEEDED.

STONE TRACKING PAD DETAIL



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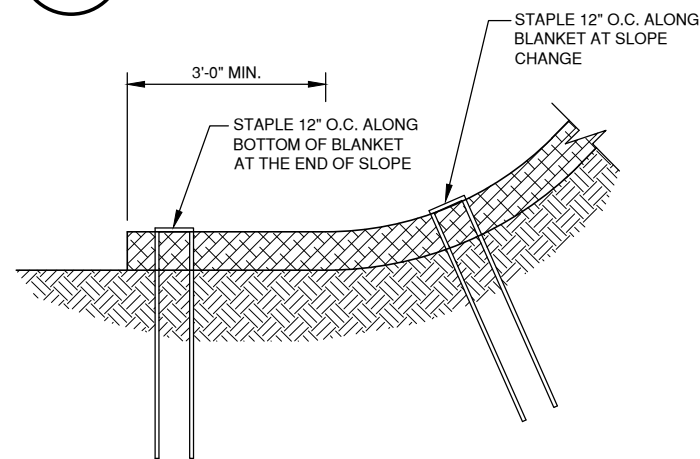
SLOPE DETAIL

1
XX

END SEAM OF BLANKETS OVERLAP 2"-4". PLACE STAPLES, ONE ON EACH CORNER OF BLANKET, 12" O.C. ALONG BLANKET END THROUGH BOTH BLANKETS. UPSLOPE BLANKET LAPS OVER DOWNSLOPE BLANKETS IN A SHINGLE AFFECT.

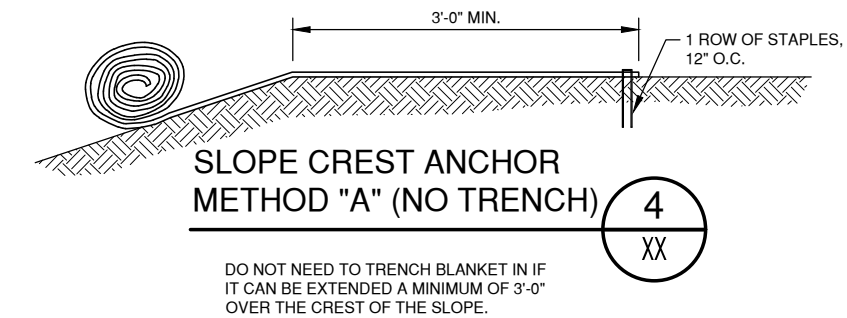
END ROLL OVERLAP

2
XX



BOTTOM OF SLOPE TERMINATION

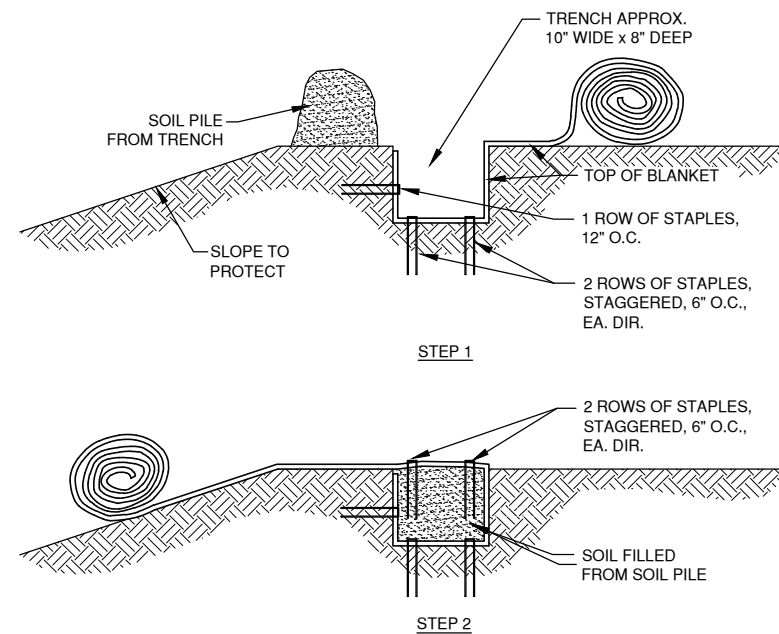
3
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SLOPE CREST ANCHOR METHOD "A" (NO TRENCH)

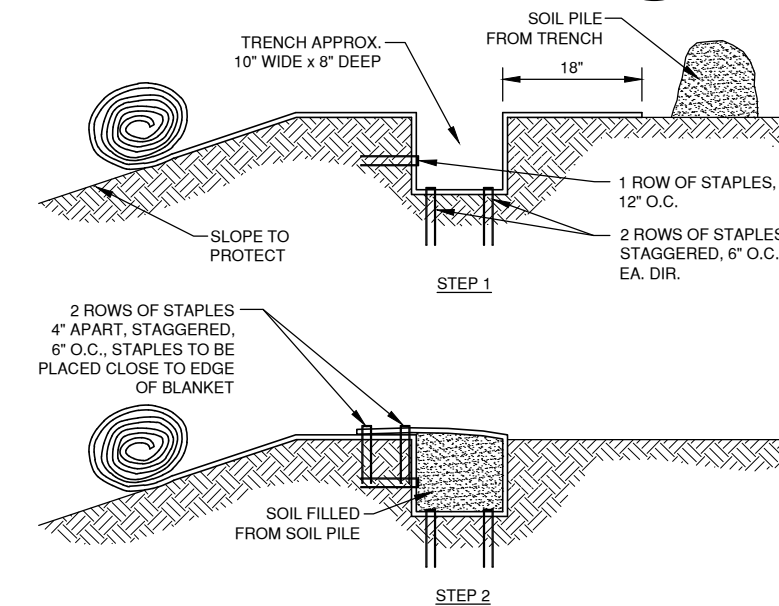
4
XX

DO NOT NEED TO TRENCH BLANKET IN IF IT CAN BE EXTENDED A MINIMUM OF 3'-0" OVER THE CREST OF THE SLOPE.



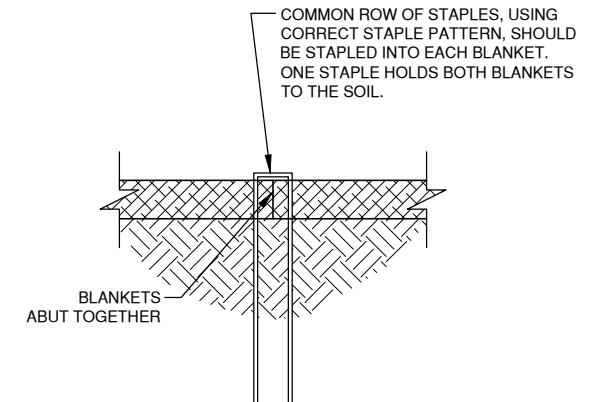
SLOPE TRENCHING METHOD "B"

5
XX



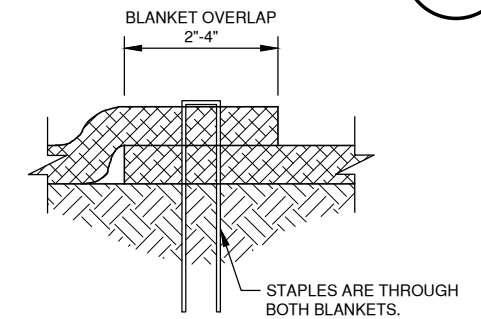
SLOPE TRENCHING METHOD "C"

6
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SIDE SEAM ABUT STAPLE DETAIL

7
XX



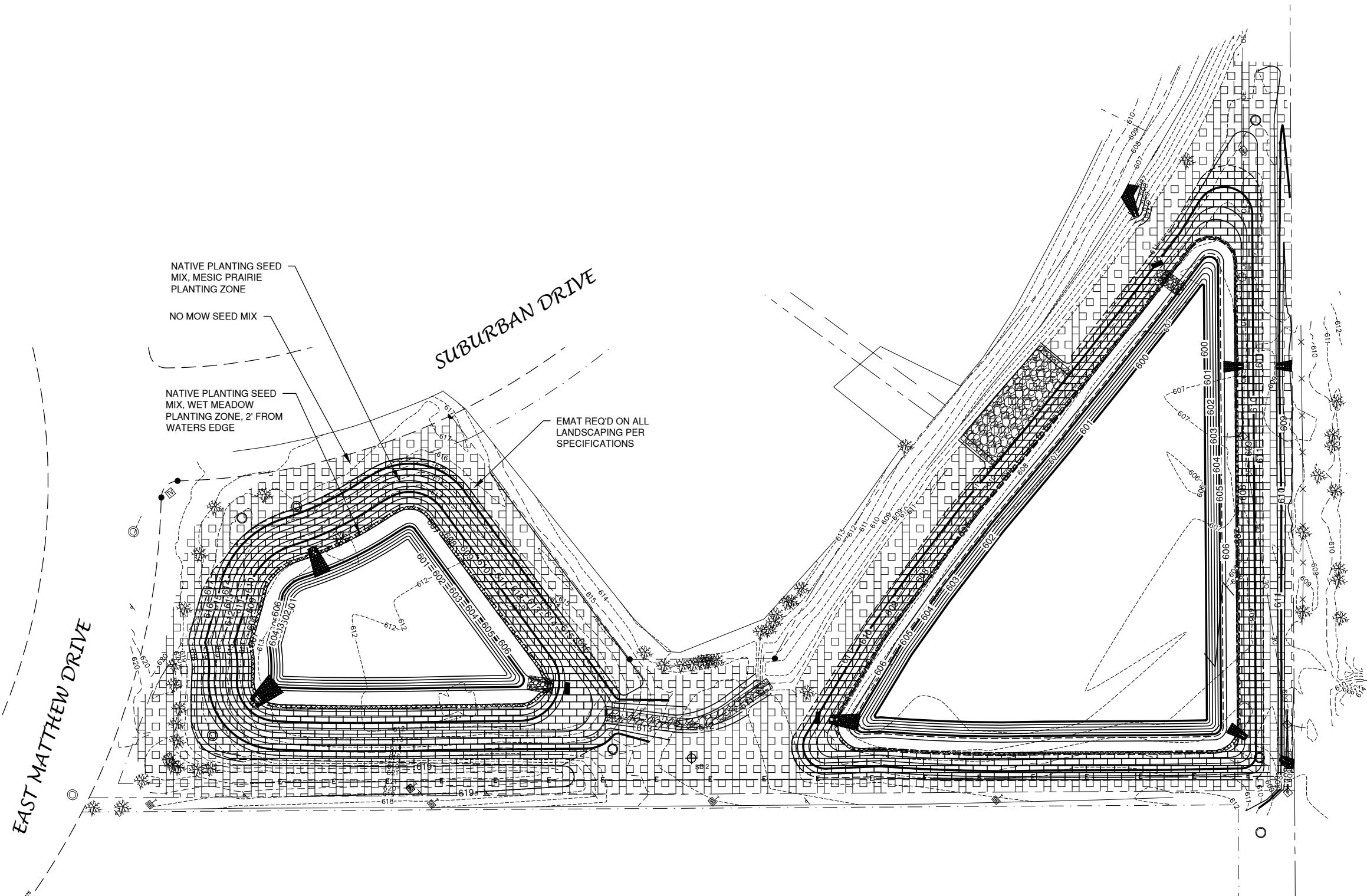
SIDE SEAM OVERLAP STAPLE DETAIL

8
XX

NOTES:
1. STAPLE PATTERNS ARE DEPENDENT ON SITE CONDITIONS. SEE MANUFACTURER STAPLE PATTERN GUIDE FOR DETAILS.

LEGEND

-  NATIVE PLANTING SEED MIX, MESIC PRAIRIE PLANTING ZONE
-  NO MOW SEED MIX
-  NATIVE PLANTING SEED MIX, WET MEADOW PLANTING ZONE



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RESTORATION PLAN

NAME: MATTHEW DRIVE POND RECONSTRUCTION	BY	DATE	REVISIONS / ISSUES	
PROJECT # 21-09	SURVEYED		NO.	DATE
	DRAWN BDR	05-2021	BY	REMARKS
	DESIGNED BDR	05-2021		
	CHECKED			