

PROJECT MANUAL FOR:

Judicial Ditch No. 6 Repair *Rice & Steele Counties, MN*

December 16, 2024

Project No. 22-25087



Architecture
Engineering
Environmental
Planning
ISGinc.com

REPORT FOR:
Rice-Steele Joint Drainage Authority
Steven Pahs
1810 30th Street NW
Faribault, MN 55021
507.332.5408

FROM:
ISG
Bailey Bocchino, **PE**
6465 Wayzata Boulevard, Suite 970
St. Louis Park, MN 55426
952.426.0699

THIS PAGE IS INTENTIONALLY LEFT BLANK

**SECTION 00 0105
CERTIFICATIONS PAGE**

**RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6
RICE-STEELE JOINT DRAINAGE AUTHORITY
WALLCOTT TOWNSHIP, MINNESOTA
ENGINEER PROJECT NO. 22-25087**

*I HEREBY CERTIFY THAT THESE SPECIFICATIONS WERE PREPARED BY ME OR
UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.*

Bailey Bocchino

BAILEY BOCCHINO, P.E. LIC. NO. 59968

DATED THIS 16TH DAY OF DECEMBER, 2024

END OF SECTION

**SECTION 00 0110
TABLE OF CONTENTS**

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

- A. 00 0000 - Spec Book Cover
- B. 00 0105 - Certifications Page
- C. 00 0110 - Table of Contents
- D. 00 1113 - Advertisement for Bids
- E. 00 2113 - Instructions to Bidders
- F. 00 3100 - Available Project Information
- G. 00 3113 - Bidding and Construction Schedule
- H. 00 4100 - Bid Form
 - 1. Attachment - Estimated Quantities
- I. 00 4114 - Prime Contractor Response
 - 1. Attachment - First Tier Subcontractor List
 - 2. Attachment - Additional Subcontractor List
 - 3. Attachment - Equipment Available List
 - 4. Attachment - Reference List
 - 5. Attachment - Bid Bond EJCDC C-430 Penal Sum Form
- J. 00 4545 - Special Instructions for Non-Minnesota Contractors
 - 1. Attachment - Withholding Fact Sheet 12 - Surety Deposits for Non-Minnesota Construction Contractors
 - 2. Attachment - Form SDE - Exemption from Surety Deposits for Non-Minnesota Contractors
 - 3. Attachment - Form SDE Instructions
- K. 00 5000 - Contracting Forms and Supplements
 - 1. Attachment - Performance Bond EJCDC C-610 Form
 - 2. Attachment - Payment Bond EJCDC C-615 Form
 - 3. Attachment - Contractor's Application for Payment EJCDC C-620 Form

4. Attachment - Field Order EJCDC C-942 Form
 5. Attachment - Change Order EJCDC C-941 Form
 6. Attachment - Certificate of Substantial Completion EJCDC C-625 Form
 7. Attachment - Warranty Bond EJCDC C-612 Form
- L. 00 5200 - Agreement Form
- M. 00 6572 - Construction Contracts with State or Local Government Agencies
1. Attachment - Withholding Fact Sheet 13 - Construction Contracts with State or Local Government Agencies
 2. Attachment - Form IC134 - Contractor Affidavit
 3. Attachment - Form IC134 Instructions
- N. 00 7200 - General Conditions
1. Attachment - EJCDC C-700 - Standard General Conditions of the Construction Contract, 2018 Edition
- O. 00 7300 - Supplementary Conditions

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

- A. 01 2000 - Price and Payment Procedures
- B. 01 2200 - Unit Prices
- C. 01 3000 - Administrative Requirements
- D. 01 2300 - Alternates
 1. Attachment - Shop Drawing Submittal Form
 2. Attachment - Requirements for Electronically Submitted Shop Drawings
- E. 01 4000 - Quality Requirements
- F. 01 4100 - Regulatory Requirements
- G. 01 4216 - Definitions
- H. 01 4219 - Reference Standards
- I. 01 5000 - Temporary Facilities and Controls
- J. 01 5500 - Vehicular Access and Parking
- K. 01 5713 - Temporary Erosion and Sediment Control

- L. 01 6000 - Product Requirements
- M. 01 7000 - Execution and Closeout Requirements
- N. 01 7113 - Mobilization
- O. 01 7419 - Construction Waste Management and Disposal
- P. 01 7800 - Closeout Submittals

DIVISION 02 -- EXISTING CONDITIONS

- A. For Site Preparation and Earthwork, see Division 31
- B. For Pavements and Site Improvements, see Division 32
- C. For Site Utilities, see Division 33

DIVISION 31 -- EARTHWORK

- A. 31 0010 - Application of Water
- B. 31 0011 - Site Restoration
- C. 31 0100 - Major Utility Crossing
- D. 31 2316 - Excavation
- E. 31 2319 - Dewatering
- F. 31 2500 - Erosion and Sediment Control
- G. 31 3700 - Riprap

DIVISION 32 -- EXTERIOR IMPROVEMENTS

- A. 32 9219 - Seeding

DIVISION 33 -- UTILITIES

- A. 33 0513 - Structures and Intakes
- B. 33 4510 - Agricultural Drain Tile
- C. 33 4520 - Culverts

DIVISION 34 -- TRANSPORTATION

- A. 34 0100 - Maintenance and Restoration of Roadways

SECTION 00 1113 ADVERTISEMENT FOR BIDS

RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6

RICE-STEELE JOINT DRAINAGE AUTHORITY

WALLCOTT TOWNSHIP, MINNESOTA

ENGINEER PROJECT NO. 22-25087

General Notice

Rice-Steele Joint Drainage Authority (Owner) is requesting Bids for the construction of the following Project: Rice & Steele Counties Judicial Ditch No. 6

ISG (the Engineer) Project No. **22-25087**

Bids for the construction of the Project will be received by ISG (the Engineer) electronically through QuestCDN until January 14, 2025 at 10:00 AM local time. At that time the Bids received will be posted publicly online.

The project includes the following major quantities of Work:

1. Approximately 7,400 CY of top soil stripping and 8,700 CY of excavation material for open ditch side slope flattening.
2. Removal and replacement of two box culverts for existing open ditch field crossings.
3. Approximately 1,450 CY Class III Riprap for side slope flattening, armoring of culverts and tile outlets and construction of rock riffle structures.
4. Clean 395 LF of 13.5' x 12' box culvert under Interstate 35.
5. Tile outlet repairs, side inlets, site restoration, seeding and erosion control.

The awarded contractor must guarantee the tile work under the contract for three years after its completion against any fault or negligence on the part of the awarded Contractor.

Obtaining the Bidding Documents

Information and Bidding Documents for the Project can be found at the following designated website:

Quest Construction Data Network (QuestCDN)

www.questcdn.com

The QuestCDN eBidDoc number is 9417919. For assistance and free membership registration, contact QuestCDN at 952.233.1632 or info@questcdn.com.

Bidding Documents may be downloaded from the designated website. Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

Bidding Documents may only be purchased for download online at the designated website for a fee of \$22.00.

The bidder must electronically submit the proposal online using the designated website. The bidder must pay an online bidding fee off \$42.00.

Pre-bid Conference

A pre-bid conference call for the Project will be held on January 7, 2024 at 10:00 AM. Attendance at the pre-bid conference call is encouraged but not required.

Virtual Meeting Room:..... <https://tinyurl.com/b63j8jve>

Phone Number..... (612) 474-1960

Conference ID Number:..... 688 857 376

Instructions to Bidders

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

By: Bailey Bocchino, P.E.

Title: Water Resources Engineer

Date: December 19, 2024

END OF ADVERTISEMENT FOR BIDS

SECTION 00 2113

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

TERMS USED IN THESE INSTRUCTIONS TO BIDDERS HAVE THE MEANINGS INDICATED IN THE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS. ADDITIONAL TERMS USED IN THESE INSTRUCTIONS TO BIDDERS HAVE THE MEANINGS INDICATED BELOW:

- 1.01 *Issuing Office* – The office from which the Bidding Documents are to be issued, and which registers plan holders.
- ISG
115 East Hickory Street, Suite 300
Mankato, Minnesota 56001

ARTICLE 2 - BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.06 *Electronic Documents*

- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
 - 1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 2017 or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.
- C. After the Contract is awarded, the Owner will provide or direct the Engineer to provide for the use of the Contractor documents that were developed by Engineer as part of the Project design process, as Electronic Documents in native file formats.
 - 1. Electronic Documents that are available in native file format include:
 - a. CAD files
 - b. GIS Shapefiles
 - 2. Release of such documents will be solely for the convenience of the Contractor. No such document is a Contract Document.
 - 3. Unless the Contract Documents explicitly identify that such information will be available to the Successful Bidder (Contractor), nothing herein will create an obligation on the part of the Owner or Engineer to provide or create such information, and the Contractor is not entitled to rely on the availability of such information in the preparation of its Bid or pricing of the Work. In all cases, the Contractor shall take appropriate measures to verify that any electronic/digital information provided in Electronic Documents is appropriate and adequate for the Contractor's specific purposes.
 - 4. In no case will the Contractor be entitled to additional compensation or time for completion due to any differences between the actual Contract Documents and any related document in native file format.
 - 5. Contractor shall sign an Electronic Transfer Agreement with I & S Group, Inc. (ISG) prior to any electronic files being released.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 If the value of this Contract exceeds \$50,000, Minnesota Statute 16C.285 concerning Responsible Contractor requirements shall be enforced including the following provisions:
 - A. All bidders furnishing a bid for this Contract shall submit to the Owner the signed statement attached in Section 00 4114 under oath by an owner or officer verifying compliance with each of the minimum criteria in Minnesota Statutes, section 16C.285, subdivision 3.
 - B. The term 'responsible contractor' as used in this solicitation document means a contractor as defined in Minnesota Statutes, section 16C.285, subdivision 3.

- C. Any prime contractor or subcontractor that does not meet the minimum criteria in Minnesota Statutes, section 16C.285, subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded the construction contract for the project or to perform work on the project.
 - D. A false statement under oath verifying compliance with any of the minimum criteria shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project and may result in termination of a contract awarded to a prime contractor or subcontractor that submits a false statement.
 - E. A prime contractor shall submit to the Owner upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to Minnesota Statutes, section 16C.285, subdivision 3, clause 7.
- 3.02 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five days of Owner's request, Bidder must submit the following additional information:
- A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications; coordinate with provisions of Article 11 of these Instructions, "Subcontractors, Suppliers, and Others."
- 3.03 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.04 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4- PRE-BID CONFERENCE

- 4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.
- 4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

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

- 5.01 *Site and Other Areas*
- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.
- 5.02 *Existing Site Conditions*
- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

- a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
- B. Underground Facilities: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- 5.03 *Other Site-related Documents*
- A. No other Site-related documents are available.
- 5.04 *Site Visit and Testing by Bidders*
- A. ***The project site is only accessible by traveling across private property. Bidder is required to provide notice to Engineer and coordinate with landowner prior to visiting site.***
- B. Bidder is required to visit the site and conduct a thorough visual examination of the site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the site.
- C. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- D. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.
- E. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- F. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.
- 5.05 *Owner's Safety Program*
- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.
- 5.06 *Other Work at the Site*
- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written

contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:
 - A. Bailey Bocchino P.E. Email: bailey.bocchino@isginc.com
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than ten days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8 - BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10 - SUBSTITUTE AND "OR EQUAL" ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer within 10 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request must comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions, and the review of the request will be governed by the principles in those paragraphs. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all registered Bidders. Bidders cannot rely upon approvals made in any other manner.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 11.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within 24 hours after Bid opening:
- A. All portions of work.
- 11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12 - PREPARATION OF BID

- 12.01 The Bid Form is included with the Electronic Bidding Documents.
- A. All blanks on the Bid Form shall be completed to submit the Bid Form electronically. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 12.02 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- A. The corporate seal must be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 12.03 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.04 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.05 A Bid by an individual must show the Bidder's name and official address.
- 12.06 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.07 All names must be printed in ink below the signatures.
- 12.08 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.09 Postal and e mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.10 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.11 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13 - BASIS OF BID

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

figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14 - SUBMITTAL OF BID

- 14.01 A Bid must be received no later than the date and time prescribed and in the manner indicated in the Advertisement or invitation to bid and must be submitted electronically through the Bidding Documents Website. The Bid must be accompanied by the Bid security and other requirement documents.
- 14.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15 - MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An electronically submitted Bid may be withdrawn by the Contractor at any time prior to the date and time for the opening of Bids by logging into the Bidding Documents Website and manually withdrawing the Bid.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 A Bid may not be modified or withdrawn following the date and time for the opening of Bids.

ARTICLE 16 - OPENING OF BIDS

- 16.01 Electronically submitted Bids will be opened at the time indicated in the advertisement or invitation to bid. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids through the Bidding Documents Website.

ARTICLE 17 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18 - EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
 - A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.
 - B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Owner, be declared unacceptable.
 - C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Owner, be cause to invalidate the bid.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
 - A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

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

ARTICLE 19 - BONDS AND INSURANCE

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

ARTICLE 20 - SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

END OF SECTION

SECTION 00 3100
AVAILABLE PROJECT INFORMATION
PART 1 GENERAL

EXISTING CONDITIONS

- 1.01 *Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:*
- 1.02 *Project Site Drone Footage: Flown date November 15, 2024.*
- A. Youtube Link: <https://tinyurl.com/36bzcfst>

PERMITS

- 2.01 *Owner has obtained the following permits and/or approvals, that are required to be secured prior to commencement of construction work on this project:*
- A. MnDOT Miscellaneous Work on Trunk Highway Right of Way

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)
END OF SECTION

**SECTION 00 3113
 BIDDING AND CONSTRUCTION SCHEDULE
 RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6
 RICE-STEELE JOINT DRAINAGE AUTHORITY
 WALLCOTT TOWNSHIP
 ENGINEER PROJECT NO. 22-25087**

DECEMBER 19, 2024	ADVERTISEMENT FOR BIDS POSTED
JANUARY 7, 2024 @ 10:00 AM	PRE-BID CONFERENCE
JANUARY 14, 2025 @ 10:00 AM	BID LETTING
LATE-JANUARY, 2025	ESTIMATED DATE TO ISSUE NOTICE OF AWARD
MAY 15, 2025	CONSTRUCTION TO COMMENCE ON OR AFTER
SEPTEMBER 15, 2025	SUBSTANTIAL COMPLETION
OCTOBER 30, 2025	FINAL COMPLETION

END OF SECTION

**SECTION 00 4100
BID FORM**

RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6

RICE-STEELE JOINT DRAINAGE AUTHORITY

WALLCOTT TOWNSHIP, MINNESOTA

ENGINEER PROJECT NO. 22-25087

THE TERMS USED IN THIS BID WITH INITIAL CAPITAL LETTERS HAVE THE MEANINGS STATED IN THE INSTRUCTIONS TO BIDDERS, THE GENERAL CONDITIONS, AND THE SUPPLEMENTARY CONDITIONS.

ARTICLE 1 - OWNER AND BIDDER

THIS BID IS SUBMITTED TO:

Rice-Steele Joint Drainage Authority

1810 30th Street NW

Faribault, MN 55021

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

ARTICLE 2 - ATTACHMENTS TO THIS BID

THE FOLLOWING DOCUMENTS ARE SUBMITTED WITH AND MADE A CONDITION OF THIS BID:

Required Bid security;

Bidders Proof of Responsibility Form;

List of First Tier Subcontractors;

List of Available Equipment;

List of References

ARTICLE 3 - BASIS OF BID - UNIT PRICES

Unit Price Bids

- A. Bidder will perform the following Work, of the estimated quantities attached, at the unit prices indicated on the electronic bid form :

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

ARTICLE 4 - TIME OF COMPLETION

Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

Bidder accepts the provisions of the Agreement as to liquidated and special damages.

ARTICLE 5 - BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

Bid Acceptance Period

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

Instructions to Bidders

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

Receipt of Addenda

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

Bidder's Representations

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

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

Bidder's Certifications

- A. The Bidder certifies the following:
 1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

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

Bidder: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address: _____
(for giving notices)

City: _____

State: _____

Zip Code: _____

Bidders Contact Information

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone Number: _____

Email: _____

Address: _____

City: _____

State: _____

Zip Code: _____

Bidder's Contractor License No. _____
(if applicable)

END OF SECTION

SECTION 00 4100.01
ESTIMATED QUANTITIES
RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6 REPAIR
ENGINEER PROJECT 22-25087

TOTAL ESTIMATED QUANTITIES			
Item Code	Item	Unit	Estimated Quantity
01.7113.1000.01	MOBILIZATION	LS	1
31.2311.1000.03	CLEANING 13.5' X 12' RC BOX CULVERT	LF	395
31.2316.1000.07	COMMON EXCAVATION (P) (EV)	CY	8699
31.2316.1000.07	COMMON BORROW (P) (CV)	CY	257
31.2316.1000.07	TOP SOIL STRIP & PLACE SPOILS (EV)	CY	7425
31.2500.1000.03	INSTALL BIO-ROLL	LF	405
31.3700.1000.07	CLASS III RIPRAP WITH GEOTEXTILE FABRIC	CY	1453
32.9219.1000.04	SEED MIX 25-142 W/MNDOT CATEGORY 20 EROSION CONTROL BLANKET	SY	595
32.9219.1000.10	16.5' BUFFER STRIP SEEDING (SEED MIX: MNDOT SEED MIX 25-142 WITH TYPE 3 MULCH)	AC	1.71
32.9219.1000.10	SIDESLOPE SEEDING (SEED MIX: MNDOT SEED MIX 25-142 WITH CATEGORY 20 EROSION CONTROL BLANKET)	SY	12100
33.0513.1000.02	INSTALL 12-INCH ASI RISER ASSEMBLY W/TRASH GRATE	EA	2
33.0513.1000.02	INSTALL 10-INCH ASI RISER ASSEMBLY W/TRASH GRATE	EA	1
33.0513.1000.02	INSTALL 12-INCH ASI OUTLET ASSEMBLY	EA	2
33.0513.1000.02	INSTALL 10-INCH ASI OUTLET ASSEMBLY	CY	1
33.4510.1000.02	24-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1
33.4510.1000.02	8-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	2
33.4520.1000.02	10-FOOT x 6-FOOT RC BOX CULVERT END SECTION	EA	2
33.4520.1000.02	REMOVE METAL CULVERTS	EA	6
33.4520.1000.02	REMOVE FIELD CROSSING	EA	2
33.4520.1000.03	10-FOOT x 6-FOOT RC BOX CULVERT	LF	42
33.4520.1000.03	96-INCH CLASS III RCP PIPE	LF	48
33.4520.1000.07	GRANULAR BEDDING MATERIAL	CY	55
34.0100.1000.02	OPEN CUT & RESTORE FIELD CROSSING	EA	1

SECTION 00 4114 PRIME CONTRACTOR RESPONSE

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE PROJECT TITLE: RICE & STEELE COUNTIES JUDICIAL DITCH NO. 6

This form includes changes by statutory references from the Laws of Minnesota 2015, chapter 64, sections 1-9. This form must be submitted with the response to this solicitation. A response received without this form, will be rejected.

Minn. Stat. § 16C.285, Subd. 7. IMPLEMENTATION. ... any prime contractor or subcontractor or motor carrier that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project...

Minn. Stat. § 16C.285, Subd. 3. RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA. "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:

- A. The Contractor:
 1. is in compliance with workers' compensation and unemployment insurance requirements;
 2. is in compliance with Department of Revenue and Department of Employment and Economic Development registration requirements if it has employees;
 3. has a valid federal tax identification number or a valid Social Security number if an individual; and
 4. has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.
- B. The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:
 1. repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of \$25,000 or more within the three-year period, provided that a failure to pay is "repeated" only if it involves two or more separate and distinct occurrences of underpayment during the three-year period;
 2. has been issued an order to comply by the commissioner of Labor and Industry that has become final;
 3. has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;
 4. has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;
 5. has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or

6. has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;*
- C. The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;*
- D. The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*
- E. The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;*
 - * Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.
- F. The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions that have authority to debar a contractor; and
- G. All subcontractors and motor carriers that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).

Minn. Stat. § 16C.285, Subd. 5. SUBCONTRACTOR VERIFICATION.

A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract, and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Subd. 5a. **Motor carrier verification.** A prime contractor or subcontractor shall obtain annually from all motor carriers with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each motor carrier. A prime contractor or subcontractor shall require each such motor carrier to provide it with immediate written notification in the event that the motor carrier no longer meets one or more of the minimum criteria in subdivision 3 after submitting its annual verification. A motor carrier shall be ineligible to perform work on a project covered by this section if it does not meet all the minimum criteria in subdivision 3. Upon request, a prime contractor or subcontractor shall submit to the contracting authority the signed verifications of compliance from all motor carriers providing for-hire transportation of materials, equipment, or supplies for a project.

Minn. Stat. § 16C.285, Subd. 4. VERIFICATION OF COMPLIANCE.

A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3, with the exception of clause (7), at the time that it responds to the solicitation document.

A contracting authority may accept a signed statement under oath as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. A prime contractor, subcontractor, or motor carrier that fails to verify compliance with any one of the required minimum criteria or makes a false statement under oath in a verification of compliance shall be ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor or motor carrier that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria. A verification of compliance need not be notarized. An electronic verification of compliance made and submitted as part of an electronic bid shall be an acceptable verification of compliance under this section provided that it contains an electronic signature as defined in section 325L.02, paragraph (h).

CERTIFICATION

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

- A. My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285, and**
- B. if my company is awarded a contract, I will submit Attachment A-1 prior to contract execution, and**
- C. if my company is awarded a contract, I will also submit Attachment A-2 as required.**

Authorized Signature of Owner or Officer	Printed Name:
Title	Date
Company Name	

NOTE: Minn. Stat. § 16C.285, Subd. 2, (c) If only one prime contractor responds to a solicitation document, a contracting authority may award a construction contract to the responding prime contractor even if the minimum criteria in subdivision 3 are not met.

END OF SECTION 00 4114

SECTION 00 4114.01
FIRST TIER SUBCONTRACTOR LIST
 ATTACHMENT A-1

MINN. STAT. §16.285, SUBD. 5:

1.01 A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to the execution of a construction contract with each subcontractor.

FIRST - TIER SUBCONTRACTOR NAMES (LEGAL NAME OF COMPANY AS REGISTERED WITH THE SECRETARY OF STATE)	NAME OF CITY WHERE COMPANY HOME OFFICE IS LOCATED	WORK BEING PERFORMED BY SUBCONTRACTOR

--	--	--

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-1

1.01 *By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:*

1.02 *All first-tier subcontractors listed on Attachment A-1 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. §16C.285*

AUTHORIZED SIGNATURE OF OWNER OR OFFICER:	PRINTED NAME:
TITLE:	DATE:
COMPANY NAME:	

END OF FIRST-TIER SUBCONTRACTOR LIST

**SECTION 00 4114.02
 ADDITIONAL SUBCONTRACTOR LIST**

ATTACHMENT A-2

**(PRIME CONTRACTOR TO SUBMIT AS SUBCONTRACTORS ARE ADDED
 TO THE PROJECT)**

THIS FORM MUST BE SUBMITTED TO PROJECT MANAGER OR INDIVIDUAL AS IDENTIFIED IN THE SOLICITATION DOCUMENT.

MINN. STAT. §16.285, SUBD. 5:

1.01 If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

ADDITIONAL SUBCONTRACTOR NAMES (LEGAL NAME OF COMPANY AS REGISTERED WITH THE SECRETARY OF STATE)	NAME OF CITY WHERE COMPANY HOME OFFICE IS LOCATED	WORK BEING PERFORMED BY SUBCONTRACTOR

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2

1.01 *By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:*

1.02 *All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. §16C.285*

AUTHORIZED SIGNATURE OF OWNER OR OFFICER:	PRINTED NAME:
TITLE:	DATE:
COMPANY NAME:	

END OF ADDITIONL SUBCONTRACTOR LIST

**SECTION 00 4114.03
EQUIPMENT AVAILABILITY LIST**

(SUBMIT WITH PRIME CONTRACTOR RESPONSE)

AS PART OF THE OVERALL BID PACKAGE, THE PRIME CONTRACTOR AND/OR SUBCONTRACTOR SHALL INCLUDE IN ITS VERIFICATION A LIST OF ALL OF ITS EQUIPMENT AVAILABLE FOR WORK ON THE PROJECT.

TYPE OF EQUIPMENT TO BE USED	MAKE, MODEL, & YEAR OF EQUIPMENT TO BE USED

END OF DOCUMENT

SECTION 00 4114.04

REFERENCES LIST

(SUBMIT WITH PRIME CONTRACTOR RESPONSE)

AS PART OF THE OVERAL BID PACKAGE, THE PRIME CONTRACTOR MUST INCLUDE AT LEAST FIVE REFERENCES. THE REFERENCES SHALL BE OF WORK COMPLETED WITHIN THE LAST 5 YEARS AND SHALL INCLUDE BUT NOT BE LIMITED TO (PREFERENCE ON PUBLIC PROJECTS);

*Open Ditch Cleaning, Deepening, Widening
Culvert Replacement, Repair, Installation, Cleaning*

REFERENCE #1

Project Name					
Project Owner					
General Description of Project					
Project Cost		Date Project Completed			
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Engineer					

REFERENCE #2

Project Name					
Project Owner					
General Description of Project					
Project Cost		Date Project Completed			
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Engineer					

REFERENCE #3

Project Name					
Project Owner					
General Description of Project					
Project Cost		Date Project Completed			
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Engineer					

REFERENCE #4

Project Name					
Project Owner					
General Description of Project					
Project Cost		Date Project Completed			
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Engineer					

REFERENCE #5

Project Name					
Project Owner					
General Description of Project					
Project Cost		Date Project Completed			
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Engineer					

THE OWNER AND/OR ENGINEER MAY REJECT THE BID OF THE PRIME CONTRACTOR, IF THE PRIME CONTRACTOR DOES NOT SUPPLY ANY APPROPRIATE REFERENCES AS DESCRIBED ABOVE.

END OF SECTION

BID BOND (PENAL SUM FORM)

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

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

SECTION 00 4545
SPECIAL INSTRUCTIONS FOR NON-MINNESOTA CONTRACTORS
PART 1 GENERAL

GENERAL REQUIREMENTS

- 1.01 *If the value of this Contract exceeds \$50,000.00, Minnesota Statute 290.9705 requires public entities to withhold eight (8) percent of payments to Non-Minnesota Contractors.*
- 1.02 *The withholding of eight (8) percent as a Minnesota surety deposit shall be in addition to retainage from progress payments as provided in Article 6 of the Agreement.*
- 1.03 *Minnesota statute does allow for a waiver of this requirement. Review the following attached documents for waivers and additional information:*
- A. Withholding Fact Sheet 12 - Surety Deposits for Non-Minnesota Construction Contractors.
 - B. Form SDE - Exemption from Surety Deposits for Non-Minnesota Contractors.
 - C. Instructions for Form SDE.

END OF SECTION

Surety Deposits for Non-Minnesota Construction Contractors

12

Withholding Fact Sheet 12

Fact Sheet

Surety Deposit Law

If you hire or contract with a non-Minnesota contractor to perform construction work in Minnesota, you must withhold 8 percent (.08) of their compensation as a Minnesota surety deposit. Payments are subject to 8 percent withholding only if the work was performed in Minnesota and the value of the contract exceeds \$50,000.

The cash surety is deposited with the department and is used as a surety to guarantee that the contractor has fulfilled the requirements for withholding, sales and use, franchise, and income taxes.

Exemption

A non-Minnesota construction contractor may qualify for an exemption from the surety deposit if one of the following requirements are met:

- The contractor gives the department a bond that is secured by an insurance company licensed in Minnesota and is equal to 8 percent of the contract. The bond remains in effect until the contractor satisfies all tax liabilities. You may choose to complete Form SDB, *Non-Minnesota Contractor's Bond*, to submit to the department.
- The contractor gives the department a cash surety. A cash surety is evidence of a savings account, deposit or certificate of deposit in, or issued by, a state bank, national bank, or savings and loan association doing business in Minnesota. Interest and dividends earned on the principal amount may be retained by the contractor.
- The contractor is performing work for a government agency and has a payment and performance bond.
- The contractor has done construction work in Minnesota during the past three calendar years and has fully complied with Minnesota laws regarding withholding, sales and use, corporate franchise, and income taxes.

How a Contractor Applies for Exemption

To apply for an exemption from the surety deposit, the non-Minnesota construction contractor must complete and file Form SDE, *Exemption from Surety Deposits for Non-Minnesota Contractors*, with the department.

If approved, a department representative will sign the form and return it to the contractor. The contractor must then make a copy and give the original Form SDE to the person or business for whom they are doing the work to show they are exempt from the 8 percent surety deposit.

How to Pay the Surety Deposit

If you are required to withhold 8 percent from a non-Minnesota construction contractor's pay, complete and file Form SDD, *Surety Deposits for Non-Minnesota Contractors*, with the department. The department will hold the surety deposits until the contractor's state tax obligations are considered fulfilled.

After the project has been completed, the construction contractor can apply for a refund using Form SDR, *Refund of Surety Deposits for Non-Minnesota Contractors*. The department will refund any amounts held as surety, including interest.

Additional Requirements

Non-Minnesota construction contractors doing work for Minnesota subdivisions (counties, cities, school districts, etc.) must file a contractor affidavit, in addition to complying with the surety provision. For details, see Withholding Fact Sheet 13, *Construction Contracts with State or Local Government Agencies*.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282-9999 or 1-800-657-3594

This information is available in alternate formats.

Exemption from Surety Deposits for Non-Minnesota Contractors

Please type or print clearly. This information will be used for returning the form to you.

Contractor Address City State ZIP code	Total contract amount \$	Minnesota tax ID number
	Contact person	Daytime phone
	Contract starting date	Projected completion date
	Business type (check one): <input type="checkbox"/> Corporation <input type="checkbox"/> S corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Sole proprietor	

Name of business or government agency	Contact person	Daytime phone
Contract owner's address City State ZIP Code	Project number	
Project location address City State ZIP code		

I request exemption from surety deposits under Minnesota law (M.S. 290.9705) for the following reason (check one box only and complete the information requested):

- I have a cash surety or a bond secured by an insurance company licensed in Minnesota. The bond must be 8 percent of the total contract amount. Attach a copy of Form SDB, Non-Minnesota Contractor's Bond.

Bonding Company	Bonding Agent
Address	Daytime Phone
City State ZIP Code	Period of Bond (Month/Day/Year) From / / To / /

- I have done construction work in Minnesota during the past three calendar years and have fully complied with Minnesota law regarding Minnesota income, sales and use, corporate franchise, and withholding taxes.
- I am performing work for a government agency and have a payment and performance bond.
- I am performing work for a government agency and have a cash surety issued by a state bank, national bank, or savings and loan association doing business in Minnesota.

I declare this information is true and complete to the best of my knowledge and belief. I authorize the Department of Revenue to send a copy of this form to the contract owner and discuss this case and related taxes with the bonding company.

Contractor's signature	Title	Date
------------------------	-------	------

Mail to: Minnesota Revenue, Mail Station 6501, St. Paul, MN 55146-6501

Department of Revenue Approval

The above-named non-Minnesota contractor is exempt from the surety requirements of Minnesota Statute 290.9705 for this project.

Department of Revenue approval

Date

Form SDE Instructions

Unless the non-Minnesota construction contractor is approved for exemption, any person or business that hires or contracts with the contractor must withhold 8 percent of their compensation as a Minnesota surety deposit.

The withholding amount is deposited with the department and is used as a surety to guarantee that the contractor has fulfilled the requirements for withholding, sales and use, franchise, and income taxes.

For additional information regarding the 8 percent withholding, see Fact Sheet 12, Surety Deposits for Non-Minnesota Construction Contractors.

Purpose of Form SDE

If you are a non-Minnesota construction contractor and you want to apply for an exemption from the surety deposit (see “Exemption Requirements” below), complete and file Form SDE with the department before you start the project.

If approved, give the original, signed Form SDE to the person or business for whom you are doing the work to show you are exempt from the 8 percent surety deposit.

Surety Deposit Law

If you hire or contract with a non-Minnesota contractor to perform construction work in Minnesota, you must withhold 8 percent (.08) of their compensation as a Minnesota surety deposit. Payments are subject to 8 percent withholding only if the work was performed in Minnesota and the total payments during the year exceed \$50,000. If the total payments exceed \$50,000 in a calendar year, all of the payments, even the first \$50,000, are subject to withholding.

Exemption Requirements

A non-Minnesota construction contractor may qualify for an exemption from the surety deposit if one of the following requirements are met:

- The contractor gives the department a bond that is secured by an insurance company licensed in Minnesota and is equal to 8 percent of the contract. The bond remains in effect until the contractor satisfies all tax liabilities. You may choose to complete Form SDB, *Non-Minnesota Contractor’s Bond*, to submit to the department.

- The contractor gives the department a cash surety. A cash surety is evidence of a savings account, deposit or certificate of deposit in, or issued by, a state bank, national bank, or savings and loan association doing business in Minnesota. Interest and dividends earned on the principal amount may be retained by the contractor.
- The contractor is performing work for a government agency and has a payment and performance bond.
- The contractor has done construction work in Minnesota during the past three calendar years and has fully complied with Minnesota laws regarding withholding, sales and use, franchise, and income taxes.

If a non-Minnesota contractor is hired or contracted to perform construction work in Minnesota, the person or business who is paying the contractor must withhold 8 percent of the payment as a Minnesota surety deposit.

Unless the contractor has received exemption from surety deposits, payments made to the contractor are subject to 8 percent withholding, if:

- the construction work was performed in Minnesota; and
- the total amount paid to the non-Minnesota construction contractor during the year exceeds \$50,000.

Who can apply?

A non-Minnesota contractor can apply for an exemption if your contract exceeds or is expected to exceed \$50,000 or multiple contracts have exceeded \$50,000 cumulative per calendar year for work done in Minnesota.

Before You Start

You must have a Minnesota tax ID number from the Department of Revenue to request an exemption from surety deposit.

If you don’t have a Minnesota ID number, you may apply online at www.revenue.state.mn.us or by calling our Business Registration Office at 651-282-5225 or 1-800-657-3605.

How to Apply

To apply for an exemption from Minnesota surety deposits, file Form SDE before you start the project.

Mail this form and any required attachments to the address on the front.

If You’re Approved

If we approve the exemption, we will sign the bottom of the form and return it to you. Make a copy for your records and give the original to the business for whom you are doing the work.

If You’re Not Approved

If we determine you’re not eligible for exemption, 8 percent of each payment made to you must be withheld by the business for whom you are doing the work and deposited with the Department of Revenue.

To apply for a refund, complete Form SDR, *Refund of Surety Deposits for Non-Minnesota Contractors*. When the project is complete, and we determine that you have complied with Minnesota income, withholding, corporate franchise and sales and use tax laws, you’ll receive a refund plus interest.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282 9999 or 1-800-657-3594

This information is available in alternate formats.

Use of Information

All information on this form is required except for your phone number.

All information, except your Minnesota tax ID number, is private by state law. It cannot be given to others without your permission, except to the Internal Revenue Service, other states that guarantee the same privacy, the contract owner or bonding company and certain government agencies as provided by law.

**SECTION 00 5000
CONTRACTING FORMS AND SUPPLEMENTS**

PART 1 GENERAL

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. See Section 00 5200 - Agreement Form for the Agreement form to be executed.
- B. See Section 00 7200 - General Conditions for the General Conditions.
- C. See Section 00 7300 - Supplementary Conditions for the Supplementary Conditions.
- D. The Agreement is based on EJCDC C-520.
- E. The General Conditions are based on EJCDC C-700.

1.03 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.
- B. Bond Forms:
 - 1. Bid Bond Form: EJCDC C-430 (attached).
 - 2. Performance Bond Form: EJCDC C-610 (attached).
 - 3. Payment Bond Form: EJCDC C-615 (attached)
 - 4. Warranty Bond Form: EJCDC C-612 (attached)
- C. Pre-Award Certificates and Other Forms:
 - 1. Notice of Award Form: EJCDC C-510
- D. Post-Award Certificates and Other Forms:
 - 1. Notice to Proceed Form: EJCDC C-550
 - 2. Application for Payment Form: EJCDC C-620 (attached).
- E. Clarification and Modification Forms:
 - 1. Field Order Form: EJCDC C-942.
 - 2. Work Change Directive Form: EJCDC C-940.
 - 3. Change Order Form: EJCDC C-941.
- F. Closeout Forms:

1. Certificate of Substantial Completion Form: EJCDC C-625. (attached)

1.04 REFERENCE STANDARDS

- A. EJCDC C-430 - Bid Bond (Penal Sum Form); 2018.
- B. EJCDC C-510 - Notice of Award; 2018.
- C. EJCDC C-520 - Agreement Between Owner and Contractor for Construction Contract (Stipulated Price); 2018.
- D. EJCDC C-550 - Notice to Proceed; 2018.
- E. EJCDC C-610 - Performance Bond; 2018.
- F. EJCDC C-615 - Payment Bond; 2018.
- G. EJCDC C-620 - Contractor's Application for Payment; 2018.
- H. EJCDC C-625 - Certificate of Substantial Completion; 2018.
- I. EJCDC C-700 - Standard General Conditions of the Construction Contract; 2018.
- J. EJCDC C-940 - Work Change Directive; 2018.
- K. EJCDC C-941 - Change Order; 2018.
- L. EJCDC C-942 - Field Order; 2018.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PERFORMANCE BOND

<p>Contractor</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>	<p>Surety</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>
<p>Owner</p> <p>Name: _____</p> <p>Mailing address <i>(principal place of business)</i>: _____</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: _____</p> <p>Contract Price: _____</p> <p>Effective Date of Contract: _____</p>
<p>Bond</p> <p>Bond Amount: _____</p> <p>Date of Bond: _____</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form:</p> <p><input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____	_____
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____	By: _____
<i>(Signature)</i>	<i>(Signature)(Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

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

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows:p

PAYMENT BOND

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

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

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

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
 - 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
 18. Modifications to this Bond are as follows:

Contractor's Application for Payment No. _____

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

**Application For Payment
Change Order Summary**

Approved Change Orders			1. ORIGINAL CONTRACT PRICE.....	\$ _____
Number	Additions	Deductions	2. Net change by Change Orders.....	\$ _____
			3. Current Contract Price (Line 1 ± 2).....	\$ _____
			4. TOTAL COMPLETED AND STORED TO DATE	
			(Column F total on Progress Estimates).....	\$ _____
			5. RETAINAGE:	
			a. X _____ Work Completed.....	\$ _____
			b. X _____ Stored Material.....	\$ _____
			c. Total Retainage (Line 5.a + Line 5.b).....	\$ _____
			6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c).....	\$ _____
			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	\$ _____
			8. AMOUNT DUE THIS APPLICATION.....	\$ _____
			9. BALANCE TO FINISH, PLUS RETAINAGE	
			(Column G total on Progress Estimates + Line 5.c above).....	\$ _____
TOTALS				
NET CHANGE BY				
CHANGE ORDERS				

Contractor's Certification

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

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor Signature

By: _____ Date: _____

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ (Engineer) _____ (Date)

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ (Owner) _____ (Date)

Approved by: _____ (Date)
Funding or Financing Entity (if applicable)

FIELD ORDER NO.:

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Field Order: _____

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

Reference:

SPECIFICATION SECTION(S)	DRAWING(S) / DETAIL(S)

Description:

Attachments:

-

Issued by Engineer

By: _____
Title: _____
Date: _____

CHANGE ORDER NO.: [Number of Change Order]

Owner: _____ Owner's Project No.: _____
 Engineer: _____ Engineer's Project No.: _____
 Contractor: _____ Contractor's Project No.: _____
 Project: _____
 Contract Name: _____
 Date Issued: _____ Effective Date of Change Order: _____

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

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

Recommended by Engineer (if required)

Accepted by Contractor

By: _____
 Title: _____
 Date: _____

Authorized by Owner

Approved by Funding Agency (if applicable)

By: _____
 Title: _____
 Date: _____

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:
Engineer:
Contractor:
Project:
Contract Name:

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

This Preliminary Final Certificate of Substantial Completion applies to:

All Work The following specified portions of the Work:

Date of Substantial Completion:

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

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

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: None As follows:

Amendments to Contractor's Responsibilities: None As follows:

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

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.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

WARRANTY BOND

<p>Contractor</p> <p>Name: _____</p> <p>Address (<i>principal place of business</i>): _____</p>	<p>Surety</p> <p>Name: _____</p> <p>Address (<i>principal place of business</i>): _____</p>
<p>Owner</p> <p>Name: _____</p> <p>Address (<i>principal place of business</i>): _____</p>	<p>Construction Contract</p> <p>Description (<i>name and location</i>): _____</p> <p>Contract Price: _____</p> <p>Effective Date of Contract: _____</p> <p>Contract's Date of Substantial Completion: _____</p>
<p>Bond</p> <p>Bond Amount: _____</p> <p>Date of Bond: _____</p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 9</p>	
<p>Bond Period: Commencing 364 days after Substantial Completion of the Work under the Construction Contract, and continuing until three years after such Substantial Completion for tile and continuing until one year after such Substantial Completion for Ditch work.</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth herein, do each cause this Warranty Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<p>_____</p> <p><i>(Full formal name of Contractor)</i></p>	<p>_____</p> <p><i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>By: _____</p> <p style="text-align: center;"><i>(Signature) (Attach Power of Attorney)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract's Correction Period Obligations. The Construction Contract is incorporated herein by reference.
2. If the Contractor performs the Correction Period Obligations, the Surety and the Contractor shall have no obligation under this Warranty Bond.
3. If Owner gives written notice to Contractor and Surety during the Bond Period of Contractor's obligation under the Correction Period Obligations, and Contractor does not fulfill such obligation, then Surety shall be responsible for fulfillment of such Correction Period Obligations. Surety shall either fulfill the Correction Period Obligations itself, through its agents or contractors, or, in the alternative, Surety may waive the right to fulfill the Correction Period Obligations itself, and reimburse the Owner for all resulting costs incurred by Owner in performing Contractor's Correction Period Obligations, including but not limited to correction, removal, replacement, and repair costs.
4. The Surety's liability is limited to the amount of this Warranty Bond. Renewal or continuation of the Warranty Bond will not modify such amount, unless expressly agreed to by Surety in writing.
5. The Surety shall have no liability under this Warranty Bond for obligations of the Contractor that are unrelated to the Construction Contract. No right of action will accrue on this Warranty Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
6. Any proceeding, legal or equitable, under this Warranty Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and must be instituted within two years after the Surety refuses or fails to perform its obligations under this Warranty Bond.
7. Written notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown in this Warranty Bond.
8. Definitions
 - 8.1. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page of this Warranty Bond, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 8.2. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
 - 8.3. *Correction Period Obligations*—The duties, responsibilities, commitments, and obligations of the Contractor with respect to correction or replacement of defective Work, as set forth in the Construction Contract's Correction Period clause, EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), Paragraph 15.08, as duly modified.
 - 8.4. *Substantial Completion*—As defined in the Construction Contract.
 - 8.5. *Work*—As defined in the Construction Contract.
9. Modifications to this Bond are as follows: **None**

**SECTION 00 5200
AGREEMENT FORM
BETWEEN OWNER AND CONTRACTOR**

FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between Rice-Steele Joint Drainage Authority ("Owner") and _____ ("Contractor").

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

Owner and Contractor hereby agree as follows:

ARTICLE 1 - WORK

1.01 *Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Ditch Side Slope Flattening, Culverts, and Seeding & Erosion Control*

ARTICLE 2 - THE PROJECT

2.01 *The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Rice & Steele Counties Judicial Ditch No. 6*

ARTICLE 3 - ENGINEER

3.01 *The Owner has retained I & S Group, Inc (ISG) Engineer to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.*

3.02 *The part of the Project that pertains to the Work has been designed by ISG.*

ARTICLE 4 - CONTRACT TIMES

4.01 *Time of the Essence*

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

4.02 *Contract Times: Dates*

A. *The Work shall commence on or after May 15, 2025 unless approved in advance by Owner and Engineer.*

B. *The Work, except for final punch list repairs, will be substantially complete on or before September 15, 2025. Final Completion readiness for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 30, 2025.*

4.03 *Liquidated Damages*

A. *Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):*

1. *Substantial Completion: Contractor shall pay Owner the amount specified in the Schedule of Liquidated Damages below based on the original Contract amount for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.*
2. *Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final*

payment, Contractor shall pay Owner the amount specified in the Schedule of Liquidated Damages below based on the original Contract amount for each day that expires after such time until the Work is completed and ready for final payment.

3. Milestones: Contractor shall pay Owner the amount specified in the Schedule of Liquidated Damages below based on the original Contract amount for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone

Schedule of Liquidated Damages		
Original Contract Amount		Liquidated damage charge per calendar day, \$
From more than, \$	To and including, \$	
0	25,000	300
25,000	100,000	400
100,000	500,000	900
500,000	1,000,000	1,200
1,000,000	2,000,000	1,500
2,000,000	5,000,000	2,500
5,000,000	10,000,000	3,000
10,000,000	-	3,500

4.04 Special Damages

- A. Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.
- C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

ARTICLE 5 - CONTRACT PRICE

5.01 *Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:*

- A. For all Unit Price Work, an amount equal to the sum of the extended prices stated in Contractor's Bid (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item), attached hereto as an exhibit.
- B. The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.
- C. For all work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 Progress Payments; Retainage

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the last day of each month or as outlined in the project pay application schedule during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
 - a. 95 percent of the value of the Work completed (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 Final Payment

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

6.04 Consent of Surety

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 Interest

- A. All amounts not paid when due will bear interest at the rate of 6.00 percent per annum.

ARTICLE 7 - CONTRACT DOCUMENTS

7.01 Contents

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - c. Warranty bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual (copy of list attached).
 - 6. Drawings listed on the attached sheet index.
 - 7. Addenda (numbers 1 to _____, inclusive).
 - 8. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid

9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 - REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

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

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 Contractor's Certifications

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 Standard General Conditions

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

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

8.05 *This Agreement will be effective on _____ (which is the Effective Date of the Contract).*

Owner:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Phone: _____

Email: _____

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

Contractor:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Phone: _____

Email: _____

License No.: _____
(where applicable)

State: _____

END OF SECTION

SECTION 00 6572
CONSTRUCTION CONTRACTS WITH STATE OR LOCAL GOVERNMENT
AGENCIES
PART 1 GENERAL

GENERAL REQUIREMENTS

- 1.01 *Minnesota Statutes 290.92 and 270C.66 requires that no public entity can make final payment to a contractor until the Department of Revenue has certified that the contractor and any subcontractor have fulfilled the requirements of Minnesota withholding tax laws.*
- 1.02 *Review the following attached documents for additional information:*
- A. Withholding Fact Sheet 13 - Construction Contracts with State or Local Government Agencies.
 - B. Form IC134 - Withholding Affidavit for Contractors.
 - C. Instructions for Form IC134.

END OF SECTION

Construction Contracts with State or Local Government Agencies

13**Withholding Fact Sheet 13****Fact Sheet**

No state agency or local unit of government can make final payment to a contractor until the Department of Revenue has certified that the contractor and any subcontractor have fulfilled the requirements of Minnesota withholding tax laws.

This fact sheet explains how the contractor and subcontractor must submit a Contractor Affidavit to the department to receive a Certificate of Compliance.

Other laws may also apply to construction contractors. See Withholding Fact Sheet 12, Surety Deposits for Non-Minnesota Construction Contractors for more information.

Contractors and Subcontractors

The terms “contractor” and “subcontractor” are limited to those who supply labor, or a combination of labor and materials for specific construction, repairs, rehabilitation or improvements. The terms do not include dealers, merchants, suppliers or contractors who only supply materials.

If you are a prime contractor, contractor or subcontractor who does work on a project for the state of Minnesota or any of its local government subdivisions—such as a county, city or school district—you must file a Contractor Affidavit with the department.

If the department determines you have fulfilled the requirements of the Minnesota withholding tax laws, you will receive a Certificate of Compliance, or the electronic equivalent. Provide a copy of the certified Contractor Affidavit to the governmental unit for which you did the work to receive your final payment.

How to File a Contractor Affidavit

Once you finish your work, you may submit your Contractor Affidavit either electronically or by mail.

Before your Contractor Affidavit can be approved, all your withholding returns must be filed and all payments due to the department must be made for the period of the contract.

If you owe withholding tax, you must make your payment by certified funds before we can certify your Contractor Affidavit.

Electronically. To receive the results instantly, submit your Contractor Affidavit electronically. Go to www.revenue.state.mn.us and enter Contractor Affidavit in the Search box.

If your Contractor Affidavit is approved, you will receive a confirmation. Print and keep the confirmation page for your records. Give a copy of the confirmation page to the governmental unit or the prime contractor that hired you to receive your final payment.

If your Contractor Affidavit is denied, the reason will be provided.

By mail. If you don't have internet access, complete Form IC134, *Contractor Affidavit*, and mail it to the department at the address provided on the form. This Contractor Affidavit must be certified and returned by the department before the state or any of its subdivisions can make a final payment for your work.

If you have fulfilled the requirements of Minnesota withholding tax laws, we will sign your Contractor Affidavit and return it to you.

When you receive your certified Contractor Affidavit, give it to the governmental unit or prime contractor that hired you to receive your final payment.

State and Local Governmental Units

When a contractor or subcontractor gives you a certified Contractor Affidavit upon completion of their work, you should review it for accuracy.

The electronic Contractor Affidavit confirmation should have a confirmation number, and the date and time it was processed. The paper Form IC134 should be stamped and dated at the bottom by the department. The dates the work began and ended should correspond to the period the contractor's workers were actually working on the job. All subcontractors should be listed on the prime contractor's Contractor Affidavit.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282-9999 or 1-800-657-3594

This information is available in alternate formats.

Contractor Affidavit

This Contractor Affidavit must be certified by the Minnesota Department of Revenue before the state of Minnesota or any of its subdivisions can make final payment to contractors. For more detailed information, see the instructions on the back of this form.

Please type or print clearly. This information will be used for returning the completed form.

Company name			Daytime phone	Minnesota tax ID number
Address			Total contract amount	Month/year work began
City	State	ZIP code	\$	Month/year work ended
			Amount still due	
			\$	

Project number	Project location			
Project owner	Address	City	State	ZIP code

Did you have employees work on this project? Yes No. If no, who did the work?

Check the box that describes your involvement in the project and fill in all information requested.

Sole contractor

Subcontractor

Name of contractor who hired you

Address

Prime contractor—If you subcontracted out any work on this project, all of your subcontractors must submit their own Contractor Affidavits and have them certified by the Department of Revenue *before* you can submit your Contractor Affidavit. For each subcontractor you had, fill in the information below and attach a copy of each subcontractor’s certified Contractor Affidavit. If you need more space, attach a separate sheet.

Business name	Address	Owner/Officer

I declare that all information I have filled in on this form is true and complete to the best of my knowledge and belief. I authorize the Department of Revenue to disclose pertinent information relating to this project, including sending copies of this form, to the prime contractor if I am a subcontractor, and to any subcontractors if I am a prime contractor, and to the contracting agency.

Contractor’s signature	Title	Date
------------------------	-------	------

Mail to: Minnesota Revenue, Mail Station 6610, St. Paul, MN 55146-6610
Phone: 651-282-9999 or 1-800-657-3594

Certificate of Compliance

Based on records of the Minnesota Department of Revenue, I certify that the contractor who has signed this Contractor Affidavit has fulfilled all the requirements of Minnesota Statutes 290.92 and 270C.66 concerning the withholding of Minnesota income tax from wages paid to employees relating to contract services with the state of Minnesota and/or its subdivisions.

Department of Revenue approval

Date

Form IC134 Instructions

Contractor Affidavit

No state agency or local unit of government can make final payment to a contractor until the Department of Revenue has certified that the contractor and any subcontractor have fulfilled the requirements of Minnesota withholding tax laws.

If you are a prime contractor, a contractor or a subcontractor who did work on a project for the state of Minnesota or any of its local government subdivisions — such as a county, city or school district — you must submit a Contractor Affidavit to the Department of Revenue to receive a certificate of compliance.

Use of Information

The Department of Revenue needs **all** the requested information to determine if you have met the state income tax withholding requirements. If all required information is not provided, Form IC134 will be returned to you for completion.

All information on this Contractor Affidavit is private by state law. It cannot be given to others without your permission, except to the Internal Revenue Service, other states that guarantee the same privacy and certain government agencies as provided by law.

Minnesota Tax ID Number

You must have a Minnesota tax ID number if you have employees who work in Minnesota. You must enter your Minnesota tax ID number on Form IC134.

If you don't have a Minnesota tax ID number, apply online at www.revenue.state.mn.us or by calling our Business Registration Office at 651-282-5225 or 1-800-657-3605.

If you have no employees and did all the work yourself, you do not need a Minnesota tax ID number. Instead, enter your Social Security number in the space for Minnesota tax ID number and explain who did the work.

Submit Contractor Affidavit

Form IC134 cannot be processed by the Department of Revenue until you finish the work. If you submit the form before the project is completed, it will be returned to you unprocessed.

If any withholding payments are due to the state, Minnesota law requires certified payments before we approve your Form IC134.

If you are a subcontractor or sole contractor, submit the form when you have completed your part of the project.

If you are a prime contractor, submit the form when the entire project is completed and you have received certified Contractor Affidavits from all of your subcontractors.

If you're a prime contractor and a subcontractor on the same project

If you were hired as a subcontractor to do work on a project, and you subcontracted all or a part of your portion of the project to another contractor, you are a prime contractor as well. Complete both the subcontractor and prime contractor areas on a single Form IC134.

You may submit your Contractor Affidavit either electronically **or** by mail. This affidavit must be certified and returned before the state or any of its subdivisions can make final payment for your work.

For an immediate response: Complete and submit your Contractor Affidavit electronically. Go to www.revenue.state.mn.us and choose **Withholding Tax**. Under the File and Pay tab, click on Contractor Affidavit Information for Government Projects.

You may complete and mail Form IC134 to: Minnesota Revenue, Mail Station 6610, St. Paul, MN, 55146-6610. If you have fulfilled the requirements of Minnesota withholding tax laws, the department will sign your Form IC134 and return it to you. To receive your final payment, submit the certified Contractor Affidavit to the government unit for which the work was done. If you are a subcontractor, submit the certified Contractor Affidavit to your prime contractor to receive your final payment.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282-9999 or 1-800-657-3594

This information is available in alternate formats.

SECTION 00 7200
GENERAL CONDITIONS
FORM OF GENERAL CONDITIONS

THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT ARE AS FOLLOWS:

- 1.01 *EJCDC C-700 - Standard General Conditions of the Construction Contract, 2018 Edition.*
- 1.02 *The General Conditions applicable to this contract are attached following this page.*

RELATED REQUIREMENTS

- 2.01 *Section 00 7300 - Supplementary Conditions.*

SUPPLEMENTARY CONDITIONS

- 3.01 *Refer to Section 00 7300 for amendments to these General Conditions.*

END OF DOCUMENT

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



Copyright© 2018

National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

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

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

The copyright for this EJCDC document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology	6
Article 2—Preliminary Matters.....	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents	7
2.03 Before Starting Construction	7
2.04 Preconstruction Conference; Designation of Authorized Representatives.....	8
2.05 Acceptance of Schedules	8
2.06 Electronic Transmittals	8
Article 3—Contract Documents: Intent, Requirements, Reuse.....	9
3.01 Intent.....	9
3.02 Reference Standards.....	9
3.03 Reporting and Resolving Discrepancies	10
3.04 Requirements of the Contract Documents.....	10
3.05 Reuse of Documents	11
Article 4—Commencement and Progress of the Work	11
4.01 Commencement of Contract Times; Notice to Proceed.....	11
4.02 Starting the Work.....	11
4.03 Reference Points	11
4.04 Progress Schedule.....	12
4.05 Delays in Contractor’s Progress	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions	13
5.01 Availability of Lands	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15
5.04 Differing Subsurface or Physical Conditions	16

5.05	Underground Facilities.....	17
5.06	Hazardous Environmental Conditions at Site	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds.....	21
6.02	Insurance—General Provisions.....	22
6.03	Contractor’s Insurance.....	24
6.04	Builder’s Risk and Other Property Insurance.....	25
6.05	Property Losses; Subrogation	25
6.06	Receipt and Application of Property Insurance Proceeds	27
Article 7—Contractor’s Responsibilities		27
7.01	Contractor’s Means and Methods of Construction	27
7.02	Supervision and Superintendence	27
7.03	Labor; Working Hours	27
7.04	Services, Materials, and Equipment	28
7.05	“Or Equals”.....	28
7.06	Substitutes	29
7.07	Concerning Subcontractors and Suppliers.....	31
7.08	Patent Fees and Royalties.....	32
7.09	Permits	33
7.10	Taxes	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection	34
7.14	Hazard Communication Programs	35
7.15	Emergencies.....	35
7.16	Submittals	35
7.17	Contractor’s General Warranty and Guarantee	38
7.18	Indemnification	39
7.19	Delegation of Professional Design Services	39
Article 8—Other Work at the Site.....		40
8.01	Other Work	40
8.02	Coordination	41
8.03	Legal Relationships.....	41

Article 9—Owner’s Responsibilities	42
9.01 Communications to Contractor	42
9.02 Replacement of Engineer	42
9.03 Furnish Data	42
9.04 Pay When Due.....	42
9.05 Lands and Easements; Reports, Tests, and Drawings.....	43
9.06 Insurance.....	43
9.07 Change Orders	43
9.08 Inspections, Tests, and Approvals.....	43
9.09 Limitations on Owner’s Responsibilities	43
9.10 Undisclosed Hazardous Environmental Condition.....	43
9.11 Evidence of Financial Arrangements.....	43
9.12 Safety Programs	43
Article 10—Engineer’s Status During Construction	44
10.01 Owner’s Representative.....	44
10.02 Visits to Site.....	44
10.03 Resident Project Representative.....	44
10.04 Engineer’s Authority	44
10.05 Determinations for Unit Price Work	45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work	45
10.07 Limitations on Engineer’s Authority and Responsibilities	45
10.08 Compliance with Safety Program.....	45
Article 11—Changes to the Contract	46
11.01 Amending and Supplementing the Contract	46
11.02 Change Orders	46
11.03 Work Change Directives.....	46
11.04 Field Orders.....	47
11.05 Owner-Authorized Changes in the Work.....	47
11.06 Unauthorized Changes in the Work.....	47
11.07 Change of Contract Price	47
11.08 Change of Contract Times.....	49
11.09 Change Proposals.....	49
11.10 Notification to Surety.....	50

Article 12—Claims.....	50
12.01 Claims.....	50
Article 13—Cost of the Work; Allowances; Unit Price Work	51
13.01 Cost of the Work	51
13.02 Allowances	55
13.03 Unit Price Work.....	55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work	56
14.01 Access to Work.....	56
14.02 Tests, Inspections, and Approvals.....	56
14.03 Defective Work	57
14.04 Acceptance of Defective Work.....	58
14.05 Uncovering Work	58
14.06 Owner May Stop the Work	58
14.07 Owner May Correct Defective Work.....	59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period	59
15.01 Progress Payments.....	59
15.02 Contractor’s Warranty of Title	62
15.03 Substantial Completion.....	62
15.04 Partial Use or Occupancy	63
15.05 Final Inspection	64
15.06 Final Payment.....	64
15.07 Waiver of Claims	65
15.08 Correction Period	66
Article 16—Suspension of Work and Termination	67
16.01 Owner May Suspend Work	67
16.02 Owner May Terminate for Cause.....	67
16.03 Owner May Terminate for Convenience.....	68
16.04 Contractor May Stop Work or Terminate	68
Article 17—Final Resolution of Disputes	69
17.01 Methods and Procedures.....	69
Article 18—Miscellaneous	69
18.01 Giving Notice	69
18.02 Computation of Times.....	69

18.03 Cumulative Remedies 70
18.04 Limitation of Damages 70
18.05 No Waiver 70
18.06 Survival of Obligations 70
18.07 Controlling Law 70
18.08 Assignment of Contract..... 70
18.09 Successors and Assigns 70
18.10 Headings..... 70

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

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

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

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

1.02 Terminology

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

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

ARTICLE 2—PRELIMINARY MATTERS

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

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

2.02 *Copies of Documents*

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

2.03 *Before Starting Construction*

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

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

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

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

3.02 *Reference Standards*

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

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

B. *Resolving Discrepancies*

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

3.04 *Requirements of the Contract Documents*

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

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

3.05 *Reuse of Documents*

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

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

4.04 *Progress Schedule*

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

4.05 *Delays in Contractor's Progress*

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

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

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

5.01 *Availability of Lands*

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

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

5.02 *Use of Site and Other Areas*

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

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

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

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

5.03 *Subsurface and Physical Conditions*

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

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

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

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

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

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

5.04 *Differing Subsurface or Physical Conditions*

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

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

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

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

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

5.05 *Underground Facilities*

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

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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

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

5.06 *Hazardous Environmental Conditions at Site*

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

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

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

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

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

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

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

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

- Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
 - E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
 - F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
 - G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
 - H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

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

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

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

6.03 *Contractor's Insurance*

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

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

6.04 *Builder's Risk and Other Property Insurance*

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

6.05 *Property Losses; Subrogation*

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

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

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

6.06 *Receipt and Application of Property Insurance Proceeds*

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

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

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

7.02 *Supervision and Superintendence*

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

7.03 *Labor; Working Hours*

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

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

7.04 *Services, Materials, and Equipment*

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

7.05 *"Or Equals"*

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

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

7.06 *Substitutes*

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

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

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

7.07 *Concerning Subcontractors and Suppliers*

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

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

7.08 *Patent Fees and Royalties*

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

7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

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

7.12 *Record Documents*

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

7.13 *Safety and Protection*

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

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

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

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

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

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

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

D. Resubmittal Procedures for Shop Drawings and Samples

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

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

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

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

7.17 Contractor's General Warranty and Guarantee

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

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

7.18 *Indemnification*

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

7.19 *Delegation of Professional Design Services*

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

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

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

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

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

8.02 *Coordination*

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

8.03 *Legal Relationships*

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

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

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.01 *Owner’s Representative*

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

10.02 *Visits to Site*

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

10.03 *Resident Project Representative*

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

10.04 *Engineer’s Authority*

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

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

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

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

10.08 *Compliance with Safety Program*

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

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

11.02 *Change Orders*

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

11.03 *Work Change Directives*

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

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

11.04 *Field Orders*

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

11.05 *Owner-Authorized Changes in the Work*

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

11.06 *Unauthorized Changes in the Work*

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

11.07 *Change of Contract Price*

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

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

11.08 *Change of Contract Times*

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

11.09 *Change Proposals*

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

B. *Change Proposal Procedures*

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

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

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

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

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

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

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

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

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

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

13.01 *Cost of the Work*

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

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

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

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

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

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

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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

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

13.02 Allowances

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

13.03 Unit Price Work

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

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

E. *Adjustments in Unit Price*

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

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

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

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

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

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

14.03 *Defective Work*

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

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

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

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

14.06 *Owner May Stop the Work*

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

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

14.07 Owner May Correct Defective Work

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

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

15.01 Progress Payments

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

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

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

C. *Review of Applications*

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

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- D. *Payment Becomes Due*
1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.
- E. *Reductions in Payment by Owner*
1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

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

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

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

15.04 *Partial Use or Occupancy*

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

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

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

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

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

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

15.07 *Waiver of Claims*

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

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

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

15.08 *Correction Period*

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

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

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

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

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

16.03 *Owner May Terminate for Convenience*

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

16.04 *Contractor May Stop Work or Terminate*

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

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

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

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

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

**SECTION 00 7300
SUPPLEMENTARY CONDITIONS**

ARTICLE 2 – PRELIMINARY MATTERS

2.01 - Delivery of Bonds and Evidence of Insurance

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

B. Evidence of Contractor's Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.02 - Copies of Documents

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor three (3) printed copies of the Contract (including one fully signed counterpart of the Agreement), and none in electronic portable document format (PDF). Additional printed copies of the Contract Documents will be furnished upon request at the cost of \$75 per set.

2.06 - Electronic Transmittals

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

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

1. Basic Requirements

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed

and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions (“System Infrastructure”) at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.

1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.

2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.

b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology (“IT”) for maintaining operations of its System Infrastructure during the Project, including coordination with the party’s individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

c. Each party will operate and maintain industry-standard, industry-accepted, ISO standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.

e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own

post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.

f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.

g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

C. Software Requirements for Electronic Document Exchange; Limitations

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.

a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

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

D. Requests by Contractor for Electronic Documents in Other Formats

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.

2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:

a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may

include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.

b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.

c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.

d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.

3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at \$150 per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 - Intent

SC-3.01 Delete Paragraph 3.01.C in its entirety.

SC-3.01 Add the following new paragraphs immediately after Paragraph 3.01.G:

H. The titles and headings of the various sections and subsections of the Contract are intended for convenience of reference.

I. The Contractor shall construct and complete the Project in every detail as described in the Plans, Specifications, Special Provisions, and supplemental drawings. It is also intended and will be expected that the Work be prosecuted diligently and pressed vigorously to completion. The Contractor shall consider the public interests, as well as the obligations and rights of all other parties concerned. The Contractor assumes full responsibility for performance of the Work and agrees to furnish all labor, materials, equipment, tools, supplies, transportation, and other incidentals necessary or convenient for successful completion of the Project.

J. The Contract may not fully describe every detail or make specific allowances for all probable exceptions and contingencies. The Engineer has authority to administer the Contract, rule on apparent discrepancies, fulfill intentions, and allow for construction needs in the performance and completion of the Work. When the Contract is silent or omits a detailed description, only the best general practice is to prevail and materials and workmanship shall be of first quality. Failure to itemize every allowable exception or condition does not mean that the governing provisions will be enforced equally under all

conditions or on all parts of the Work. The Engineer will decide all discretionary matters as they arise.

K. In construction of temporary facilities that do not become a part of the permanent improvement, the Engineer may waive requirements that the Engineer considers unnecessary in fulfilling the intended service or function of the facility. The Engineer may allow alternative designs from those specified for temporary construction provided that costs to the Owner do not exceed those that would be incurred with the specified design.

L. If operational controls or restrictions are found to be unnecessary or result in unjustified expense, the Engineer may alter or waive those provisions when it is in the best interests of the Owner to permit earlier completion of work, take advantage of improved designs and materials, make use of improved techniques or the most efficient practices, or otherwise facilitate progress or completion of the Work.

M. Changes that alter acceptance or payment provisions of the Contract can only be made effective by mutual agreement.

N. By proceeding without authority or in violation of any restriction imposed by the Contract, the Contractor assumes the risks of performing unauthorized work, and thereby relieves the Owner of any associated risk or loss. The Contractor may be held liable for reimbursement of any additional costs incurred by the Owner in providing for the inspection or acceptance of work performed in violation of the terms of the Contract.

3.02 - Reference Standards

SC-3.02 Add the following new paragraphs immediately after Paragraph 3.02.A.2:

3. Work under this Contract shall be performed in accordance with MnDOT Standard Specifications for Construction, including all supplements and amendments attached thereto, except as modified or supplemented by the Special Provisions, Drawings, Standard Specifications, Supplementary Conditions and General Conditions attached hereto.

4. Delete all Division I (General Requirements and Covenant) sections of the MnDOT Standard Specifications for Construction from this Contract except the following:

- a. 1101, 1103, 1713, 1721, 1803.1.A.4, 1901, and 1902.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

4.05 - Delays in Contractor's Progress

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

5. Weather-Related Delays

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following:
 - 1) that weather conditions were abnormal for the period of time in which the delay occurred,
 - 2) that such weather conditions could not have been reasonably anticipated, and
 - 3) that such weather conditions had an adverse effect on the Work as scheduled.

ARTICLE 5 - SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 - Subsurface and Physical Conditions

5.04 - Differing Subsurface or Physical Conditions

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

5.04 Differing Subsurface or Physical Conditions

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

1. differs materially from conditions shown or indicated in the GBR; or

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

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

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

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

D. Early Resumption of Work: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph SC 5.04.A;

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

F. Underground Facilities; Hazardous Environmental Conditions: Paragraph 5.05 of the General Conditions governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 of the General Conditions governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs SC 5.03 and SC 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.07 - Historic or Paleontological Conditions at Site

SC-5.07 - Add the following new paragraph immediately following Paragraph 5.06:

5.07 - Historic or Paleontological Conditions at Site

- A. Immediately upon discovery of potential historical objects of an archeological or paleontological nature within Project Site do the following:
 - 1. Restrict or suspend operations in immediate area of discovery to preserve potential historical objects, and
 - 2. Notify Engineer of presence of potential historical objects.
- B. Engineer will make arrangements for objects disposition or record desired relevant data.
- C. Support preservation and salvage effort directed by Engineer. Do not perform Work related to preservation and salvage efforts that Contractor considers Extra Work without written approval of Engineer.
- D. Owner may restrict or suspend Contractor's operations in immediate area of historical objects for a period not to exceed 72-hours, without a Contractor claim for damages. Owner will not impose restrictions over 72-hours, unless agreed by Contractor and Owner in writing.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C 610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C 615, Payment Bond (2010, 2013, or 2018 edition).

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.B:

1. After Final Acceptance, Contractor shall furnish a warranty bond issued in the form of EJCDC® C 612, Warranty Bond (2018). Contractor shall deliver the fully executed warranty bond to Owner after Final Acceptance of the agricultural tile Work under the Contract, and in no event later than 30 calendar days after Final Acceptance of the agricultural tile Work under the Contract. The warranty bond must be in a bond amount of 10 percent of the final Contract Price.
2. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be 3 years after the final acceptance hearing, unless specified in the appropriation section.
3. The warranty bond must be issued by the same surety that issues the performance bond required under Paragraph 6.01.A of the General Conditions.

6.02 *Insurance—General Provisions*

SC-6.02 Amend the first sentence of Paragraph 6.02.N to read as follows:

All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least **30 days** prior written notice has been given to the purchasing policyholder.

SC-6.02 Add the following paragraphs immediately after Paragraph 6.02.N:

- O. Prior to commencement of this agreement, the Contractor shall obtain certificates of all insurance required on a form approved by the Owner, signed by an authorized representative of the insurance carrier and stating that all provisions of the specified requirements are satisfied. The certificates shall be submitted directly to the Owner for review and approval with a record copy only to the Engineer for their files. The Contractor shall not begin any work until the Owner has reviewed and approved the insurance certificates and has so notified the Contractor directly in writing. Any notice to proceed that is issued shall be subject to such approval by the Owner.
- P. The insurance policy shall be a standard form policy provided for by a carrier approved by the State of Minnesota and shall not contain any exclusions that will restrict coverage on any operations performed by the Contractor or any subcontractor hereof.
- Q. The insurance policy shall provide full insurance to cover the Contractor's operating exposures including the picking up of materials, the operation of vehicles, the operation of collection and processing sites, explosion, remote borrow site activities, collapse, underground hazards, and contractual liability as required in Articles 7.17 and 7.18.
- R. It is a condition of the Contract that the policy waives any or all governmental immunity as a defense in any action brought against the insured or any other party to the Contract.
- S. Approval of the insurance by the Owner shall not in any way relieve or decrease the liability of the Contractor hereunder, and it is expressly understood that the Owner or Engineer does not in any way represent that the specified insurance or limits of liabilities are sufficient or adequate to protect the Contractor's interest or liabilities.
- T. liabilities are sufficient or adequate to protect the Contractor's interest or liabilities.

6.03 Contractor's Insurance

SC-6.03 Add the following paragraph immediately after Paragraph 6.03.C.5:

6. The inclusion of more than one named insured shall not operate to impair the rights of one insured against another insured, and the coverages afforded shall apply as though separate policies had been issued to each insured.

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. Other Additional Insureds: As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following:

1. None

E. *Workers' Compensation and Employer's Liability*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$1,000,000.00
Bodily injury by disease—aggregate	\$1,000,000.00
Employer's Liability	
Each accident	\$1,000,000.00
Each employee	\$1,000,000.00
Policy limit	\$2,000,000.00
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$1,000,000.00

F. *Commercial General Liability - Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.

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

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

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000.00
Products - Completed Operations Aggregate	\$2,000,000.00
Personal and Advertising Injury	\$2,000,000.00
Bodily Injury and Property Damage - Each Occurrence	\$2,000,000.00

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

Automobile Liability	Policy limits of not less than:
Bodily Injury	

Each Person	\$2,000,000.00
Each Accident	\$2,000,000.00
Property Damage	
Each Accident	\$2,000,000.00
or	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$2,000,000.00

K. *Umbrella or Excess Liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$2,000,000.00
General Aggregate	\$2,000,000.00

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements*: Contractor may meet the policy limits specified for employer’s liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy’s policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of \$2,000,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

M. *Contractor’s Pollution Liability Insurance*: Contractor is not required to provide Contractor's Pollution Liability Insurance under this contract

N. *Contractor’s Professional Liability Insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after final payment becomes due. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor’s Professional Liability	Policy limits of not less than:
Each Claim	\$2,000,000.00
Annual Aggregate	\$2,000,000.00

O. *Railroad Protective Liability Insurance*: Provide whenever Work will be performed within the right of way of a railroad or materials will be hauled across tracks of a private crossing as a designated haul road, meeting the requirements of MnDOT 1708.3.

P. *Unmanned Aerial Vehicle Liability Insurance*: If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor’s compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

Unmanned Aerial Vehicle Liability Insurance	Policy limits of not less than:
Each Claim	\$1,000,000
General Aggregate	\$1,000,000

6.04 *Builder's Risk and Other Property Insurance*

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

A. Owner shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. *Builder's Risk Requirements*: The builder's risk insurance must:

1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
 - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 - b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.
2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier). <>
5. extend to cover damage or loss to insured property while in transit. <>

6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

a. Engineer - I&S Group, Inc.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

- G. All responsibility for maintaining property insurance on any project premises or structures owned, operated, or being constructed by the Contractor remains solely with the Contractor, who may at their option insure against any other perils, and such responsibility shall remain with the Contractor until such time as this Contract is terminated. Before commencement of the Work, the Contractor shall submit written evidence that the Contractor has obtained and paid, for this period of the Contract, Builder's Risk "All-Risk" Completed Value Insurance Coverage upon entire project, which is the subject of this Contract, and including completed Work, Work in progress, and materials stored off site or in transit. Such insurance shall include as additional named insureds: Owner, Engineer and their consultants, and each of their officers, employees and agents, and any other persons with an insurable interest designated by the Owner.
- H. In the event of conflict between additional Paragraph 6.04.G with other provisions within Paragraph 6.04 of the General Conditions or Paragraph SC-6.04 of the Supplemental Conditions, Paragraph 6.04.G will assume precedence.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.02 Supervision and Superintendence

SC-7.02 Add the following new paragraphs immediately after Paragraph 7.02.B:

- C. Contractor's assigned competent resident superintendent shall be personally available at the site of the work within 24 hour notice, and authorized to act in the Contractor's behalf. This individual shall be fully authorized to:
 1. Conduct all business with the subcontractors.
 2. Negotiate and execute all Supplemental Agreements.
 3. Execute the orders and directions of the Engineer without delay.
 4. Promptly supply the materials, equipment, tools, labor, and incidentals necessary for prosecution of the work.
- D. The Contractor shall have a complete set of Drawings and Specifications available on the Project at all times while work is in progress, and shall assume full responsibility for supervision of the work irrespective of the quantity of work subcontracted.
- E. At all times while work is actually being performed, the Contractor shall have at the site of the work a competent individual who is:
 1. Authorized and fully capable of managing, directing, and coordinating the work in progress.

2. Thoroughly experienced in the type of work being performed.
3. Capable of reading and thoroughly understanding the Drawings and Specifications.
4. Authorized to receive instructions from the Engineer.

7.03 Labor; Working Hours

SC-7.03 Add the following to the end of Paragraph 7.03.A:

"...Any person employed by the Contractor or by any subcontractor who does not perform assigned work in a proper and skillful manner, or who is intemperate or disorderly, shall be removed from the Project forthwith by the Contractor upon written order of the Engineer, and shall not be employed again on any portion of the Work without Engineer's consent. Should Contractor fail to remove such person, or fail to furnish suitable and sufficient personnel for the proper prosecution of the Work, Engineer may suspend the Work until Contractor has complied with the orders."

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Except in connection with safety or emergency situations, regular working hours will be 7:00 a.m. to 7:00 p.m..
2. Contractor shall notify Engineer at least 48 hours in advance of any Owner approved planned Work on a Saturday.
3. Owner's legal holidays are New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas.

SC-7.03 Amend the first, second, and third sentences of Paragraph 7.03.C to state:

"...all Work at the Site must be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Sunday or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays only with Owner's written consent."

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.03 Add the following new subparagraph immediately after Paragraph SC 7.03.D:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as services performed by the Engineer (including the Resident Project Representative), Owner's representative, and materials testing laboratories considered routine to the project scope and not necessitated from a situation where the public welfare is put at risk..

SC-7.03 Add the following new paragraph immediately after Paragraph SC 7.03.D:

E. Contractor shall coordinate construction and hauling activity in the vicinity of churches, schools, medical facilities, and funeral homes to be cognizant of the disruptive effects of continued construction during regular working hours. The Owner reserves the right to temporarily suspend construction within one block of, and during the time of any funeral and procession. No compensation shall be granted to the Contractor due to temporary delays caused by funerals.

SC-7.03 Add the following new paragraph immediately after Paragraph SC 7.03.E:

F. Upon request by the Engineer, Contractor shall submit satisfactory qualification evidence for any person engaged in special work requiring professional training.

7.07 Concerning Subcontractors and Suppliers

SC-7.07 Add the following new sentences after the first sentence of Paragraph 7.07.J:

"...No attempt has been made in the Specification to segregate work to be performed by any trade or subcontractor. Any segregation between the trades or crafts will be solely a matter of agreement between the Contractor and his employees and his subcontractors."

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.M:

N. Contractor's portion of the Contract shall amount to not less than forty (40) percent of the total original Contract cost.

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.N:

O. No subcontractor shall further sublet any portion of the Work that Owner has agreed to allow subcontractor to perform without the written consent of both the Contractor and Owner. When such consent is given, the First tier subcontractor may sublet a portion of the Work, not to exceed fifty (50) percent of the Work originally sublet. Second tier subcontractors will not be permitted to sublet any portion of the Work.

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.O:

P. Contractor shall submit requests to sublet portions of the Contract to the Engineer at least 10 days in advance of the date on which the subcontractor intends to start work. The Contractor shall furnish one signed copy of each subcontract agreement to Engineer upon request. Subcontract prices may be omitted on Engineer's copy of the agreements.

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.P:

Q. Contractor shall comply with the requirements of Minn. Stat. §471.425, Subd. 4a, Prompt Payment to Subcontractors, which is incorporated herein by this reference.

7.09 Permits

SC-7.09 Add the following new paragraphs immediately after Paragraph 7.09.A:

B. This Project falls under the requirements of the Minnesota Pollution Control Agency (MPCA) Construction Stormwater General Permit (MN R10001). The Owner and Contractor are considered Co-Permittees. Owner shall complete the electronic online permit application. The Contractor is responsible for those portions of the permit referencing the "operator" and is the sole permittee responsible for implementing the short- and long-term best management practices (BMP). Information and requirements of the permit are available on the MPCA website: www.pca.state.mn.us

C. Owner has made application and paid for the following permits:

D. When requested, the Contractor shall furnish the Engineer with evidence indicating compliance with permit and license requirements.

7.10 Taxes

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

B. When requested, the Contractor shall furnish the Engineer with evidence indicating compliance with tax requirements.

7.11 Laws and Regulations

SC-7.11 Add the following new paragraphs immediately after Paragraph 7.11.C:

D. Contractor shall immediately report to the Engineer in writing any provisions in the Contract that are contrary to or inconsistent with any Laws or Regulations.

7.13 Safety and Protection

SC-7.13 Add the following new sentences after the first sentence of Paragraph 7.13.D:

"...Acceptable methods of remedy include the restoration of damaged property to a condition similar or equal to that existing before the damage was done, by repairing, rebuilding or replacing it as directed, monetary reimbursement of property owner for damage, injury, or loss of property, or by otherwise making good the damage in an

acceptable manner."

SC-7.13 Add the following new sentences after the first sentence of Paragraph 7.13.F:

"...The Engineer shall be furnished with copies of all such notifications and agreements if so requested."

SC-7.13 Delete Paragraph 7.13.G in its entirety and insert the following:

G. The Contractor is the sole party liable for maintaining a safe work area and utilizing safe construction practices.

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

K. Contractor's attention is particularly directed to the employee safety regulations set forth in:

1. 29 CFR 1926, Occupational Safety & Health Administration (OSHA), Construction Industry Standards.
2. Minn. Stat. §182, Occupational Safety and Health
3. Minnesota Department of Labor & Industry, OSHA Division, Minnesota Rules 5205 through 5215.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.02 Visits to the Site

SC-10.02 Amend the last sentence of Paragraph 10.02.A to read as follows:

"...On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will report to Owner known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and defects and deficiencies observed in the Work."

10.03 - Resident Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
3. *Liaison*
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
4. *Review of Work; Defective Work*
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.

c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.

5. *Inspections and Tests*

a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests: Review Applications for Payment with Contractor.*

7. *Completion*

a. Participate in Engineer's visits regarding Substantial Completion.

b. Assist in the preparation of a punch list of items to be completed or corrected.

c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 – CHANGES TO THE CONTRACT

11.05 *Owner-Authorized Changes in the Work*

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.C:

D. The Work as altered may require performance of additional work not required by the original Contract. The Contractor will be advised in writing of all revisions having any material effect on the terms of the Contract. Should any Contract Items be found unnecessary for proper completion of the Project, the Engineer will eliminate those Items from the Contract by written order to the Contractor.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.D:

E. The Contractor shall perform revised Work the same as if it had been a part of the original Contract and its performance shall not in any way invalidate the Contract nor release the Surety. No allowance, except as specifically provided by the payment provisions of the Contract, will be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor, whether resulting directly from changes in the Work or indirectly from unbalanced allocation of overhead expenses among the Contract Items or from any other cause.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.E:

F. No claim shall be made by the Contractor for any loss of anticipated profit because of changes in the Work or by reason of any variation between the Proposal quantities and the actual quantities ordered and performed.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.F:

G. Payment for altered Work will be made in accordance with the Basis of Payment provisions of the Specifications. If the added or revised Work is of sufficient magnitude to require additional time in which to complete the Project, a time extension may be granted, providing that such extension of time is agreed upon at the time that the extra work is ordered.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.G:

H. Except as specifically authorized in writing by the Engineer at the time additional work is done beyond the original scope of the Contract Documents, the Contractor shall make no claims for additional compensation. The Contractor's plea of ignorance of foreseeable conditions which will create difficulties or hindrances in the execution of the work will not be acceptable to the Owner as an excuse for any failure of the Contractor to fulfill the requirements of the Contract Documents, and shall not be a basis for the Contractor's claim for additional compensation. Any discrepancies in or conflicts between the items described in these Contract Documents must be submitted in writing to the Engineer for adjustment prior to proceeding with the work as any claims for additional compensation to achieve compliance with the requirements of those items will not be allowed or considered.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.H:

I. The Owner reserves the right to demand additional surety when additions are made; if such surety is necessary for the protection of the Owner's interest.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.I:

J. Should any Contract Items be eliminated from the Contract or any Work be deleted or ordered terminated on a Contract Item before completion of the construction unit, the Contractor will be reimbursed for all costs incurred prior to nullification that are not the result of Unauthorized Work. Compensation will be made on the following basis:

1. The accepted quantities of Work completed in accordance with the Contract will be paid for at the Contract prices.
2. For materials which have been ordered, but not incorporated in the work, reimbursement will be made on the basis of actual cost of purchase plus transportation plus and agreed upon sum for handling.
3. For partially completed items, the accepted work will be paid for on the basis of a percentage of the Contract bid price equal to the percentage of actual accomplishment toward completion of the item.

SC-11.05 Add the following new paragraph immediately after Paragraph 11.05.J:

K. Payment for completed Work at the Contract prices and for partially completed Work and materials in accordance with the above provisions together with such other allowances as are made for fixed costs, shall constitute final and full compensation for the work performed on the Contract Items which have been partially or totally eliminated from the Contract.

11.06 *Unauthorized Changes in the Work*

SC-11.06 Add the following new paragraph immediately after Paragraph 11.06.A:

B. Work done contrary to instructions of the Engineer, and any work done beyond that which is specified or ordered, will be considered as unauthorized work and will not be paid for under the provisions of the Contract. Unauthorized work shall be removed by the Contractor, at no expense to the Owner, upon receipt of written order to do so.

SC-11.06 Add the following new paragraph immediately after Paragraph 11.06.B:

C. Work done without lines and grades having been given or with materials that have not been given the required inspection, work done prior to approval of the Contract, and any extra work done prior to issuance of a Change Order or Work Change Directive therefor, may be considered as unauthorized work and as having been done at the Contractor's expense. Compensation for such work will be made only in the event that the Engineer determines it to be acceptable. No compensation will be made for work that has not been authorized in the Contract or by Supplemental Agreement.

SC-11.06 Add the following new paragraph immediately after Paragraph 11.06.C:

D. Upon failure on the part of the Contractor to comply immediately with any order issued by the Engineer in accordance with this Specification, the Owner will have the authority to cause unacceptable work to be remedied or removed and replaced, to have unauthorized work removed, and to deduct the costs from moneys due or becoming due to the Contractor.

11.08 *Change of Contract Times*

SC-11.08 Add the following new paragraph immediately after Paragraph 11.08.B:

C. A Contractor plea that insufficient time was allowed in the Contract to complete the Work will not be considered a valid reason for either an extension of the completion date or a revision of liquidated damages.

ARTICLE 13 - COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 *Cost of the Work*

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentences:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of the Minnesota Department of Transportation Standard Specifications for Construction and associated current technical memorandums.

SC-13.01 Add the following new paragraph immediately after Paragraph 13.01.B.5.c.(3):

4) Under no circumstances shall Paragraph SC 13.01.B.5.c be construed to suggest that equipment rates will be paid independently of the unit bid items. The unit bid items shall include the cost of any associated rental equipment.

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than \$1000.

13.03 *Unit Price Work*

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

E. *Adjustments in Unit Price*

1. At the Owner's discretion, the quantity of any item of Unit Price Work may be increased, decreased, or eliminated without change in the unit price provided that the variation in the quantity of that particular item does not result in a decrease of more than 20 percent of the Contract Price (based on estimated quantities at the time of Contract formation). If the variation in the quantity of that particular item of Unit Price Work results in a decrease more than 20 percent of the Contract Price, the Contractor may request a unit price change to reflect a proportionate share of fixed costs attributable to that item.

2. Adjusted unit prices will apply to all units of that item.

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

ARTICLE 15 - PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 *Progress Payments*

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

D. Payment Becomes Due

1. Thirty (30) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

15.03 *Substantial Completion*

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

15.06 *Final Payment*

SC-15.06 Add the following new subparagraph after subparagraph 15.06.A.2.e:

- f. submittal of Certificate of Compliance from the Commissioner of Taxation to the Owner showing compliance with Minn. Stat. §290.92, Tax Withheld at Source Upon Wages; Other Payments, which requires the withholding of state income taxes for wages paid employees on this project. The Contractor is advised that before such certificate can be issued, the Contractor must first place on file with the Commissioner of Taxation an affidavit that the Contractor has complied with the provisions of Minn. Stat. §290.92. The required IC134 Withholding Affidavit for Contractors form is supplied by the Commissioner of Taxation, Centennial Building, St. Paul, Minnesota, 55101 upon request.

15.08 *Correction Period*

SC-15.08 Add the following new Paragraph 15.08.G:

- G. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to also include 3 years after Final Acceptance as to the agricultural tile Work.

ARTICLE 17 - FINAL RESOLUTIONS OF DISPUTES

17.01 *Methods and Procedures*

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

- C. In an effort to resolve any conflicts that arise during the design or construction of the project or following the completion of the project, the Contractor and the Engineer agree that all disputes between them arising out of or relating to this agreement shall be resolved, if possible, at the lowest possible staff level. If the dispute cannot be resolved between Contractor and Engineer staff, the presidents of the respective firms will meet to attempt to resolve the dispute(s). If resolution is not achieved, the dispute shall be submitted to non-binding mediation.

- D. The rights and remedies available to the Contractor shall be limited to breach of Contract, and no other cause of action, including, without limitation, negligence, misrepresentation or other tort theory. Any litigation concerning claims under the Contract shall be venued in the County District Court of the County the project is located within. Neither the Engineer, nor the Contractor shall be entitled to a jury trial in any such action. If the Owner or Engineer is a prevailing party the Contractor shall reimburse the Owner or Engineer its costs and reasonable attorney's fees. The right and remedies to the Owner

hereunder shall be in addition to and shall not be construed in any way as a limitation of any rights and remedies available to the Owner which are otherwise available by law or contract, by special warranty or guarantee, or by other provision of the Contract documents. The provision of this paragraph shall be as effective as if repeated specifically in the contract documents in connection with each particular duty, obligation, right and remedy to which it may apply. All representations, warranties and guarantees made in the Contract documents shall survive final payment, termination or completion of this agreement.

E. No waiver or failure to enforce any part or provision of the contract documents, including but not limited to the change order process, shall be deemed to be waiver by the Owner of any subsequent default or breach of the same or any other part or provision contained herein, or right to enforce the same or any other part or provision contained herein.

END OF SECTION

**SECTION 01 1100
SUMMARY OF WORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Location
- B. Project Description
- C. Specification Format and Convention
- D. Work Covered by Contract Documents
- E. Work Restrictions

PART 2 EXECUTION

2.01 PROJECT LOCATION

- A. Project is located at:
 - City: Wallcott Township
 - State: Minnesota

2.02 PROJECT DESCRIPTION

- A. Work shall include, but is not limited to:
 - 1. The construction of Ditch Side Slope Flattening, Culverts, Seeding, and Erosion Control .

2.03 SPECIFICATION FORMAT AND CONVENTION

- A. Format: Specifications are organized into Divisions and Sections using 49-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Division 01: Sections in Division 01 govern execution of Work of all Sections in Specifications.
- B. Convention: Specifications use certain conventions for style of language and intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as context of Contract Documents indicates. Abbreviated or outlined type includes incomplete sentences.

2. Imperative mood and streamlined language are generally used in Specifications. Requirements expressed in imperative mood are to be performed by Contractor. Occasionally, indicative or subjunctive mood may be used in Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. Omission of words or phrases, such as; “the Contractor shall”, “in conformance with”, “shall be”, “shall comply with”, “as noted on the plans”, “according to the plans”, “a”, “an”, “the”, and “all”, are intentional and depending on the context, are implied.
 - b. Supply omitted words or phrases by inference.
 - c. Part numbers are not intended to be consecutive, but represent standard specification titles.

2.04 WORK COVERED BY CONTRACT DOCUMENTS

A. Definitions:

1. Words install, provide, furnish, include, supply, apply, place, or any combination thereof, are intended to be synonymous and indicate that material and/or work specifically mentioned is to be furnished and installed by Contractor and/or Contractor's Subcontractor(s).

B. Work Covered:

1. Furnish all labor, transportation, materials, apparatus, and tools necessary for entire proper completion of Work. Install, maintain, and remove all equipment for proper execution of Contract. Be responsible for safe, proper, and lawful performance of equipment, maintenance and use of same and perform in best manner and everything properly incidental thereto, as stated in Contract Documents or reasonably implied therein.

2.05 WORK RESTRICTIONS

A. Working Hours:

1. Regular working hours shall be as defined in Contract Documents. Requests for expansion of working hours must be approved by Owner. Submit all requests in writing through Engineer. Structure proposed Progress Schedule based on stated working hours.

B. Use of Site:

1. Use of Site shall be limited to Contractor's construction operations, including on-site storage of Work related equipment, materials, debris, and field offices.
2. Confine Work within limits of easements, public rights-of-way, and construction limits as indicated on Drawings.

3. Provide for all additional lands and access thereto from appropriate property owners at own expense if operations cannot be controlled to within Site as indicated on Drawings, or additional space is desired.
4. Furnish Engineer with copy of any easement or agreement from private property owners so obtained.
5. If Contractor believes there has been delay of Owner's furnishing of easements, rights-of-way, or lands indicated on Drawings, sole remedy shall be an extension of Contract time, for which a claim may be made therefore as provided in Paragraph 10.05 of General Conditions.
6. No consideration for extra payment will be given related to stated Work Restrictions.

C. Material, Equipment, and Debris Storage:

1. Obtain Owner's approval of location contemplated for storage of materials, equipment, and debris prior to placing such on Owner's properties.
2. Promptly relocate stored materials, equipment, or debris on Owner's properties upon request should any occasion necessitating access to Site.
3. Do not deposit or store construction equipment, materials, or debris in areas open to traffic which obstruct or interfere with safe flow thereof per Engineer's determination.
4. Provide signage, flaggers, etc. as necessary whenever material or equipment are delivered for Project in areas open to traffic with potential to interfere with safe flow thereof.
5. Store materials and equipment in manner which will preserve their quality and fitness; provide temporary storage buildings as required.
6. Assume sole responsibility for protection and safekeeping of equipment and materials on or near Site and no claim shall be made against Owner by reason of any act of an employee or trespasser.

D. Work Sequence:

1. Coordinate all Site Work phases with Owner and Engineer.
2. Duly notify Engineer at least 48-hr. prior to commencing Work on this Contract, and at least 24-hr. prior to beginning each major Site Work operation. Engineer shall be informed in advance of daily working hour schedule and of proposed changes to schedule. While Work is in progress, notify Engineer at least 24-hr. in advance of any proposed change in equipment, forces, or sequence of operations that may require a change in Engineer's staff.
3. Conduct Site Work in phases to allow for proper temporary traffic controls, coordination with adjacent property needs, Owner's schedule for demolition, public safety access, and as otherwise indicated in Contract Documents.

4. Conduct Site Work on a 24-hr./day basis and 7-days/week under emergency conditions.
5. Determine type and extent of temporary facilities Work requires to maintain continuous operation.
6. Provide all temporary connections, parallel temporary lines, temporary power, temporary bulkheads, temporary equipment, and temporary operations necessary to perform Work.

E. Safety:

1. Owner, Engineer, or their Representative may indicate potential safety hazards noticed at Site. Discussions of this nature are intended as a service and to prevent unforeseen damages by Contractor. However, Contractor shall remain only party liable for maintenance of safe construction practices.

F. Utility Companies:

1. Contact all utility owners and ascertain location of all existing underground utilities, if any, before performing excavation operations. Give notice to owners of all known utilities at least 48-hr. before starting operations affecting those properties by calling "Gopher State One Call".
2. Protect and preserve all in-place structures and utilities not specifically designated for removal in Contract Documents. Replace and/or repair all damaged in-place structures and/or utilities at own cost.
3. Maintain all utility services to existing Site and surrounding properties to greatest extent possible. Where construction operations require interruption of service of a utility, notify Owner, Engineer, property owner, and utility provider at least 48-hr. before interruption and advise them of anticipated schedule related to utility service interruption.
 - a. Provide temporary water and sanitary service if interruption will last longer than 4-hr.
4. Immediately notify utility owner thereof and Engineer of discovery of utility property whose existence was not known.
5. Promptly notify proper authorities in event a utility service is interrupted as a result of accidental breakage or as a result of being exposed or unsupported, and cooperate to determine extent of damage and restore utility service as may be needed.
6. Construction operations adjacent to utility properties shall not start until arrangements, satisfactory to utility owner, have been made for protection of utility's property and continuation of service.
7. Employ special equipment or construction methods, and hand labor if necessary, to accomplish Work adjacent to utility properties without damage thereto. Do not interfere with persons engaged in protecting or moving utility property or in operating utility.

8. It is understood and agreed that Contractor has considered in bid all permanent and temporary utilities in their present and relocated positions as indicated in Contract Documents. Contractor will not receive additional compensation for delays, inconveniences, or damages due to interference from those utilities or operations of adjusting, working around, or moving them.
9. Permanent or temporary utilities which have not been shown in the Contract may or may not exist at the Site. Contractor will not receive additional compensation for delays, inconveniences, or damages due to interference from those utilities or operations of adjusting, working around, or moving them.
10. Reimburse utility owners for damages caused to utility properties whose existence and approximate locations were made know before damage was done. Nothing in Contract Documents shall make Contractor liable for damage to utility property located below ground surface, in absence of negligence, if owner of property, after reasonable notice from Contractor, fails to advise Contractor of its location and approximate depth below ground surface.
11. Coordinate relocation of existing private utilities with utility owners.

G. Emergency Services:

1. Coordinate all Work requiring shutting down water service or limiting access to buildings by emergency equipment with affected emergency departments by daily notifications of scheduled Work.

H. Businesses and Private Property Owners Adjacent to Site:

1. Perform Work in such a manner that access to Site and surrounding properties is maintained at all times possible.
2. Where Work requires closure of access to Site or surrounding properties, coordinate with said property owner at least 48-hr. before anticipated access interruption and all access shall be at least temporarily restored each night before end of work day. No property owner shall be left without adequate access overnight.

I. Other Contractors:

1. Coordinate with other contractors performing Work on other projects in vicinity of this Project at own cost, including but not limited to allowing access for their delivery of equipment and materials. Known Work includes the following:
 - a.

J. Garbage and Recycling Service:

1. Accommodate garbage and recycling pickup while performing Work at Site, including coordination with individual garbage and recycling companies providing service to properties within Site to maintain access to individual garbage and recycling pickup locations. If unable to accommodate garbage and recycling pickup due to Site constraints, independently contract for garbage and recycling service as necessary to provide continuous service to affected properties at own cost.

2. Coordination of garbage and recycling service at Site shall be considered incidental Work for which no direct compensation will be made.

K. Mail Service:

1. Remove any mailbox, standard, or other enclosure, such as newspaper delivery boxes, as necessary for Work to proceed within Site, and deliver to property owner for safe storage during Work.
2. Provide temporary mailboxes at an accessible location during Work per requirements of local Postmaster to provide continuous service to affected properties. Each temporary mailbox shall be clearly labeled and mounted on a stable standard as a minimum.
3. Upon completion of Work affecting mail service delivery to properties within Site, reinstall salvaged mailbox, standard, or other enclosure as directed by Engineer. If existing mailbox, standard, or other enclosure has sustained damage due to removal or reinstallation operations, provide new items as replacement of those damaged at own cost. If mailbox, standard, or other enclosure are deteriorated due to factors outside control of Contractor to a point that reinstallation is not feasible, at property owner's option, install new mailbox, standard, or other enclosure furnished by property owner, provide new mailbox, standard, or other enclosure of Contractor's choosing meeting requirements of local Postmaster, or Contractor shall be relieved of responsibility for reinstallation.
4. Coordination of mail service at the Site shall be considered incidental Work for which no direct compensation will be made.

END OF SECTION

**SECTION 01 2000
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Price and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Document 00 5200 - Agreement Form: Contract Price, retainages, payment period, monetary values of unit prices.
- C. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- D. Document 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- E. Section 01 2200 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.03 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Engineer for approval.
- B. Forms filled out by hand will not be accepted.
- C. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Engineer for approval.
- C. Forms filled out by hand will not be accepted.
- D. For each item, provide a column for listing each of the following:

1. Item Number.
 2. Description of work.
 3. Scheduled Values.
 4. Previous Applications.
 5. Work in Place and Stored Materials under this Application.
 6. Authorized Change Orders.
 7. Total Completed and Stored to Date of Application.
 8. Percentage of Completion.
 9. Balance to Finish.
 10. Retainage.
- E. Execute certification by signature of authorized officer.
- F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- G. Submit three copies of each Application for Payment.
- H. When Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Engineer will issue instructions directly to Contractor.
- C. For other required changes, Engineer will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
1. The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Engineer will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation

within 3 days.

- E. Contractor may propose a change by submitting a request for change to Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Engineer for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Engineer.
 - 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 - 4. For change ordered by Engineer without a quotation from Contractor, the amount will be determined by Engineer based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
 - 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

- H. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2200
UNIT PRICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

- A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Unit Prices.
- B. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Engineer.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. When a (P) designation is placed on an individual item or specific portion of an item in the Bid Form, Drawing dimensions are used to compute the pay quantity for that item of the Work. (P) designated quantities will generally be limited to those items whose dimensions are specified and controlled by field checks during or after construction. Engineer's intent is to avoid unnecessary expense in measuring dimensions where the original Drawing dimensions are still valid. Engineer will not use (P) designation to fix pay quantities without recourse to equitable adjustment, except as the detailed measurement provisions of a particular class of work may stipulate.
- E. Engineer will determine the quantities of those items that do not have a (P) designation by using methods of measurement indicated in the Contract Documents, unless otherwise

agreed to in writing. Engineer will use Drawing dimensions to the extent applicable to complete the Work and will use field dimensions only when specifically indicated in the Contract Documents or when necessary to accurately dimension completed work.

- F. Engineer may adjust quantities for portions of the Work or for the entire Project. Engineer will not adjust quantities when a difference results from the use of commonly accepted dimensional approximations.
- G. Engineer will adjust the quantities on (P) designated Contract items when Engineer revises dimensions of that Work (in which case only the affected portion will be re-determined) or when Engineer decides that the quantity designated as (P) is incorrect.
- H. Engineer will determine quantities by the system of weights and measures in customary use in the United States or by the metric system, using methods conforming to good engineering practice. Units and methods of measurement contained in other Contract Specifications or elsewhere in the Contract Documents for each class of work will serve to supplement or modify these provisions by imposing measurement limitations, describing measurement or computation procedures, setting forth conversion factors or adjustment conditions, and otherwise providing for determination of reasonably accurate and representative pay quantities. Item names for pay quantities may include designated terms designed to indicate the basis for unit measurements, such as where or when the unit measurements or computations will be made. Unless otherwise stipulated in the Contract Documents, measurements and computations will be made as follows:
 - 1. Areas:
 - a. Longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures having an area of 1-square yard or less. Transverse measurements for area will be the neat dimensions shown in the Drawings or ordered by Engineer. Measured by square dimension using mean length and width or radius.
 - 2. Structures:
 - a. Structures will be measured according to neat lines shown in the Drawings or as altered to fit field conditions.
 - 3. Length:
 - a. All items that are measured by the linear measurement, such as pipe culverts, guardrail, and underdrains, will be measured parallel to base, centerline, mean cord, or foundation upon which structure is placed.
 - 4. Volume:
 - a. Excavated Volume (EV) - Yard:
 - 1) Materials that are measured by cubic yard, excavated volume (EV), will be determined by cross-section method or digital surface model method of material in its original position.
 - b. Compacted Volume (CV) - Yard:

- 1) Materials that are measured by cubic yard, compacted volume (CV), will be determined by cross-section method or digital surface model method of material in its placed and compacted position, according to placement dimensions as shown in the Contract Documents or as designated by Engineer.
- c. Loose Volume in Vehicular Measure - Yard:
- 1) Materials that are to be measured by cubic yard, loose volume (LV) vehicular measure, shall be hauled in approved vehicles complying with Section 01 2200 concerning Restrictions on Movement of Heavy Loads and Equipment and measured at point of delivery to nearest 0.13-cu.yd. Vehicles for this purpose may be of any size or type acceptable to Engineer, provided body is of such shape that its capacity and actual contents can be readily and accurately determined. Struck capacity shall be determined by Engineer for each vehicle. Contractor shall mark struck or level perimeter line on inside of box. Contractor shall load vehicle and level the load as directed by Engineer, with sufficient over-allowance being made for settlement during transit. Each load shall be leveled upon its arrival at point of delivery if so directed by Engineer. No allowance will be made for material heaped above struck capacity of vehicle. Deductions will be made in 0.65-cu.yd. increments on loads that contain less than struck capacity. Each hauling vehicle shall bear a conspicuous, legible identification mark acceptable to Engineer.
- d. Stockpiled Volume (SV) – Yard:
- 1) Materials that are to be measured by the cubic yard, stockpiled volume (SV), will be determined by cross section method or digital surface model method of material in the stockpiled position. Contractor shall shape stockpile to a condition as directed by Engineer prior to measurement.
5. Weight:
- a. Hauled materials will be paid for per weigh tickets received.
 - b. Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
 - c. Watermain weights shall be per Section 331118.
6. Other Basis of Measurement:
- a. When mutually agreed upon in writing, materials may be measured in units other than unit of measurement specified as basis of payment, but measured quantity shall be converted to specified unit of measure for payment. Factors for conversion from one basis or unit of measurement to another shall be established by Engineer and agreed to by Contractor.
7. Lump Sum:

- a. The term "lump sum," when used as a unit of measurement for payment, will mean complete payment for that item of work as described in Contract Documents.
8. Individual Unit or Each:
- a. When a complete structure, item, or unit (lump sum work) is specified as unit of measurement, unit will be measured by physical count and will include all necessary fittings and accessories.
9. Rental Equipment:
- a. Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of equipment within limits of Project.
10. Standards and Tolerances:
- a. When standard manufactured items are specified, such as fencing, wire, plates, rolled shapes, pipe conduit, unit mass, section dimensions, etc., such identification will be considered to be nominal.
- I. Measurement Devices:
- 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 - 3. Metering Devices: Inspected, tested and certified by the applicable state department within the past year.
- J. Contractor may dispute Engineer's determination of pay quantities by promptly submitting a written request to Engineer. Contractor shall state pay item and sections of Work being disputed and provide sufficient detail in order to justify an Engineer's review of that quantity. Request must be consistent with conditions governing pay item. Engineer will not review quantities unless Contractor provides satisfactory evidence substantiating that quantity is incorrect.
- K. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Engineer prior to starting work.
- L. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

1.06 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Engineer, multiplied by the unit price.
- B. Receive and accept compensation provided for in Contract Documents as full payment for furnishing all materials and for performing all Work under the Contract in a complete and

acceptable manner. Compensation is for all risk, loss, damage, and expense of whatever character arising out of nature of the Work or its prosecution, subject to provisions of Paragraph 15.07 of the General Conditions.

- C. When provisions in the Contract Documents require that unit price cover and be considered compensation in full for certain work or material essential to item, this same work or material will not also be measured or paid for under any other pay item in the Contract Documents.
- D. Term "complete in place," when used in payment provisions, means completion of Contract item or units in accordance with all indicated and specified requirements, including furnishing of all incidental materials, equipment, tools, labor, and work, unless otherwise specified. Bid prices for "complete in place" items are full compensation for any work essential for completion of item, whether or not specific material or operation is indicated.
- E. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.
 - 5. Products placed without providing Engineer with weigh ticket on date of placement unless prior arrangements are made.
 - 6. Products remaining on hand after completion of the Work.
 - 7. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Engineer.
 - 2. The defective Work will be partially repaired to the instructions of the Engineer, and the unit price will be adjusted to a new unit price at the discretion of Engineer.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Engineer to assess the defect and identify payment adjustment is final.

1.08 SCHEDULE OF UNIT PRICES

- A. See Attached Unit Price Sheet in Bid Form

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2300
ALTERNATES
PART 1 GENERAL**

SECTION INCLUDES

- 1.01 *Description of Alternates.*
- 1.02 *Procedures for pricing Alternates.*
- 1.03 *Documentation of changes to Contract Price and Contract Time.*

RELATED REQUIREMENTS

- 2.01 *Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.*

ACCEPTANCE OF ALTERNATES

- 3.01 *Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.*

SCHEDULE OF ALTERNATES

- 4.01 *Alternate No. 1*
 - Base Bid Item:
 - Alternate Item:

**PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED
END OF SECTION**

**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Submittals in general
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- B. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

- A. Project Coordinator: Resident Project Representative.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for personnel and equipment access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to Engineer through the Project Coordinator:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.

4. Test and inspection reports.
5. Manufacturer's instructions and field reports.
6. Applications for payment and change order requests.
7. Progress schedules.
8. Coordination drawings.
9. Correction Punch List and Final Correction Punch List for Substantial Completion.
10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required:
 1. Owner.
 2. Engineer.
 3. Contractor.
- C. Attendance Encouraged:
 1. Major Subcontractors.
 2. Private Utility Representatives.
 3. Landowners in Watershed
- D. Note: The following agenda items are not intended to be the final or a complete list of the items that will be discussed. A complete agenda will be distributed at the preconstruction meeting.
- E. Agenda:
 1. Execution of Owner-Contractor Agreement.
 2. Submittals:
 - a. Executed Performance and Payment bonds.
 - b. Executed Insurance Certificates.
 - c. Progress Schedule.
 - d. List of Designated Personnel

- e. List of Subcontractors, Suppliers, and Products.
3. Distribution of Contract Documents.
4. Use of premises by Owner and Contractor.
5. Security and housekeeping procedures.
6. List of subcontractors, suppliers, and products.
7. Designation of personnel representing Owner and Engineer for Contract.
8. Procedures for processing of:
 - a. Field Decisions.
 - b. Submittals.
 - 1) Shop Drawings.
 - 2) Product Data.
 - 3) Samples.
 - 4) Material Certifications.
 - c. Applications for Payment.
 - d. Proposal Requests.
 - e. Change Orders.
 - f. Contract Closeout.
9. Scheduling.
 - a. Tentative construction schedule.
 - b. Critical work sequencing.
 - c. Progress meetings.
10. Testing Requirements:
 - a. By Contractor's Geotechnical Engineer.
 - b. By Owner's Authorized Representative.
11. Work Requirements.
12. Inspection and Startup Requirements.
13. Record Document Retention Requirements.

14. Open for comments; attendees are encouraged to bring other topics or concerns up for discussion at this time.

3.02 PROGRESS MEETINGS

- A. Project Coordinator will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings as deemed necessary.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Engineer, as appropriate to agenda topics for each meeting.

3.03 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 3216

- A. Within 10 days after the date following the Notice of Award, submit preliminary schedule showing the initial critical path (CPM) of tasks to be performed as follows:
 1. A project management network scheduling tool (i.e. CPM, ect.) or a detailed bar chart shall be employed by Contractor for cost value reporting, planning and scheduling of all work required under the Contract Documents.
 2. Schedule shall show order in which Contractor proposes to execute the Work with dates on which it proposes to start various phases of the Work and estimated completion date of each phase.
- B. Duly notify Engineer at least 48 hours prior to commencing Work on this Contract, and at least 24 hours prior to beginning each major construction operation. Engineer shall be informed in advance of the daily working hour schedule and of proposed changes to the schedule. While Work is in progress, notify Engineer at least 24 hours in advance of any proposed change in equipment, forces, or sequence of operations that may require a change in Engineer's staff.

3.04 SUBMITTALS IN GENERAL

- A. All submittals shall be submitted to Engineer through Project Coordinator - No exceptions.
- B. No less than four copies of each submittal shall be submitted when submitting paper copies.
- C. PDFs by e-mail is preferred method; coordinate with Engineer's representative.
 1. Refer to the attached "Requirements for Electronically Submitted Shop Drawings".
- D. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- E. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- F. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of full range of manufacturer's standard colors, textures, and patterns.
- G. By submitting submittals, General Contractor represents to Engineer that General Contractor has:
 - 1. Reviewed and approved them.
 - 2. Determined and verified materials, field measurements and field construction criteria related thereto, or will do so.
 - 3. Checked and coordinated information contained within such submittals with requirements of the Work of the Contract Documents.
- H. Submittals that do not appear to be reviewed and approved will be returned to General Contractor without Engineer's review. Time delays for this breach in procedure will be at sole expense of General Contractor.
- I. All shop drawings shall be submitted no later than 45 days after execution of contract.
- J. Each supplier furnishing materials, supplies, or equipment for this project shall deliver to Engineer certificate from material or equipment manufacturer(s) detailing that materials, supplies, or equipment delivered by or through supplier meet requirements of the Contract Documents. Certificate shall be executed by corporate official and delivered to Engineer no later than date of delivery of materials, supplies, or equipment to job site.
- K. Failure to provide material, supply, or equipment certifications shall be sufficient cause for rejection of materials.

3.05 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below .

3.06 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Engineer's knowledge as contract administrator or for Owner. No action will be taken.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Withholding Affidavit for Contractors - Form IC-134..
 - 6. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.
- E. Refer to Section 01 7800 - Closeout Submittals.

3.08 NUMBER OF COPIES OF SUBMITTALS

- A. Please Note: At option of Engineer paper submittals will be scanned to a PDF format, reviewed, and returned to submitter via e-mail or FTP site unless requested otherwise, in writing, by submitter.
- B. Documents for Review:
 - 1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies that Contractor requires, plus two copies that will be retained by Engineer.

2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Engineer.
 3. Submit a minimum of four copies for each submittal when submitting paper copies. PDFs by e-mail is the preferred method; coordinate with Engineer's representative..
- C. Documents for Information: Submit two copies.
- D. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
- E. Samples: Submit the number specified in individual specification sections; one of which will be retained by Engineer.
1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

- A. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. Transmit each submittal with a copy of approved submittal form.
- C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- E. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- F. Deliver submittals to Engineer at business address.
- G. Schedule submittals to expedite the Project, and coordinate submission of related items.
- H. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- J. Provide space for Contractor and Engineer review stamps.

- K. When revised for resubmission, identify all changes made since previous submission.
- L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.

END OF SECTION

--	--

END OF SECTION

SECTION 01 3000.02

REQUIREMENTS FOR ELECTRONICALLY SUBMITTED SHOP DRAWINGS:

REQUIREMENTS

- 1.01 *The Contractor shall fill out and include the submittal cover sheet included in the specification book.*
- 1.02 *The shop drawings are to be reviewed by the Contractor before submitting. All field required verifications and missing information shall be completed and duly noted on the drawings. The Contractor shall review them and verify that the products submitted are acceptable per the specifications. The Contractor shall then affix their stamp on the submittal cover sheet. Contractor must review – No pass through drawings are permitted.*
- 1.03 *The Contractor shall prepare a PDF document so that all sheets of the submittal are one document. Only ONE section per submittal is permitted. If the Contractor elects to use transmittal sheets they shall be a separate attachment.*
- 1.04 *Scans shall be in color. All pages shall be oriented correctly. Actual sheets sizes for the submittal shall be 8 ½ X 11 or 11 X 17 whenever possible. All print and details must be legible at those sizes. Larger file sheets such as 24 X 36 sheet size shall be identified in the email.*
- 1.05 *The email subject line shall list the five digit project number first followed by the project name. Then section number and brief description of the submittal contents shall follow the submittal number.*
- A. Example: 12345 Blue Earth County Ditch No. 00 – 4510: Pipe Product Data Sub #01
- 1.06 *The PDF file or attachment shall be named as follow.*
- A. Example: 12345 Blue Earth County Ditch No. 00 – 4510: Pipe Product Data Sub #01.pdf
- 1.07 *The Engineer will review the drawings, make notes as required on the drawings and stamp them. The PDF file shall then be renamed by adding the action required such as REVIEWED, FURNISH AS CORRECTED, REVISE AND RESUBMIT or REJECTED.*
- A. Example: 12345 Blue Earth County Ditch No. 00 – 4510: Pipe Product Data Sub #01-REVIEWED.pdf
- 1.08 *The Engineer shall then use the original email and attach the reviewed drawings and forward back to the Contractor. The email that they are attached to will be considered the transmittal. Any notes in the body of the email from the Engineer shall be considered as written on the sheets of the PDF file.*
- 1.09 *No hard copies will be sent by the Engineer.*
- A. Note: Hard copies will be required to be included in the project close out submittals.

END OF SECTION

**SECTION 01 4000
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. References and standards.
- B. Submittals.
- C. Control of installation.
- D. Tolerances.
- E. Methods and Equipment
- F. Testing and inspection services.
- G. Manufacturers' field services.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
- C. Design Data: Submit for Engineer's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to Engineer and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.

- i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Engineer, provide interpretation of results.
- 2. Test report submittals are for Engineer's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Engineer, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Engineer.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Engineer's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to Engineer for information.
 - 2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- H. Erection Drawings: Submit drawings for Engineer's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

1.03 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. When a conflict exists the more stringent specification shall apply.
- G. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.
- H. In cases of discrepancy between individual portions of the Contract Documents, the order of supersedence is as follows:
 - 1. Calculated dimensions will govern over scaled dimensions.
 - 2. Special Provisions will govern over Drawings, Standard Specifications, Supplementary Conditions and General Conditions.
 - 3. Drawings will govern over Standard Specifications, Supplementary Conditions and General Conditions; Standard Specifications will govern over Supplementary Conditions and General Conditions; Supplementary Conditions will govern over General Conditions.
 - 4. Standard Specifications will govern over Supplementary Conditions and General Conditions.
 - 5. Supplementary Conditions will govern over General Conditions.
- I. Engineer shall decide all issues concerning errors and omissions within latitude of decision granted him as provided in Article 10 of the General Conditions that are not otherwise resolved by logical conclusion or Contract modification.

1.04 TESTING AND INSPECTION AGENCIES

- A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Owner may elect to employ and pay for services of an independent testing agency to perform quality assurance testing and inspection as deemed appropriate.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.

2. Inspection agency: Comply with requirements of ASTM D3740, ASTM E329, ASTM D3740, and ASTM E329.
 3. Laboratory: Authorized to operate in the State in which the Project is located.
 4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.
- E. Any person representing federal or state agencies, Engineer, or Owner shall have the right-of-entry to inspect the Work being performed by Contractor. If the case warrants, Contractor shall provide proper facilities and equipment for such access and inspection.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Drawing dimensions and Specification values are to be considered the target value to be strived for and complied with as the design value from which deviations (within tolerances) are allowed.
- B. Revised values shall govern in the case that Contract Document changes are ordered or authorized.
- C. It is the intent of the Specifications that materials and workmanship shall be uniform in character and shall conform to the prescribed target value or to the middle portion of the tolerance range. The purpose of the tolerance range is to accommodate occasional minor

variations from the median zone that are unavoidable for practical reasons.

- D. When a maximum or minimum value is specified, the production and processing of material and the performance of the Work shall be so controlled that the material or workmanship will not be of borderline quality or dimension.
- E. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- F. Comply with industry standard tolerances. Should industry standard tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- G. Adjust products to appropriate dimensions; position before securing products in place.

3.03 METHODS AND EQUIPMENT

- A. Employ sufficient equipment of proper size and good mechanical condition to prosecute the Work to full completion in satisfactory manner and within prescribed time. Equipment used on any portion of the Project shall be such that no damage to the Work or adjacent property will result from use.
- B. Equipment requiring calibration or measurement of capacity shall not be used until it has been calibrated or measured to satisfaction of Engineer. Furnish equipment and assistance Engineer may require to make calibration tests and obtain necessary measurements.
- C. When methods and equipment to be used in accomplishing the Work are not prescribed in the Contract Documents, Contractor is free to use any methods or equipment that demonstrates to satisfaction of Engineer will accomplish the Work.
- D. When Contract Documents require that construction be performed by use of certain methods and equipment, those methods and equipment shall be used unless others are authorized by Engineer. Contractor may request Engineer's approval to use method or type of equipment other than those specified in the Contract. Request shall include full description of methods and equipment proposed for use and explanation of reasons for desiring change. If approval is given, it shall be on condition that Contractor will be fully responsible for producing Work in conformity with Contract requirements.
- E. If, after trial use of substituted methods or equipment, Engineer determines that the Work produced does not meet Contract requirements, Contractor shall discontinue use of substitute method or equipment and shall complete remaining construction with specified methods and equipment. At no expense to Owner, Contractor shall remove unacceptable Work and replace with Work of specified quality, or shall take other corrective action as Engineer may direct.
- F. No change will be made in basis of payment for Work involved nor in Contract time, when change in methods or equipment is authorized under these provisions.

3.04 TESTING AND INSPECTION

- A. Unless otherwise specified in a specific section of these Special Provisions, materials furnished by Contractor and proposed for incorporation into the Work shall be inspected, sampled and tested as specified for each material as follows:

1. Mill Tests – Conduct mill or shop tests and submit reports where this type of test is specified and/or required by Engineer. Mill or shop tests shall be accomplished by manufacturer or supplier of materials. Perform tests in accordance with ASTM Standards if specified, or other applicable standards if no reference is included.
2. Laboratory Tests – Conduct laboratory tests and submit reports where this type of test is specified and/or required by Engineer. Laboratory tests shall be made by an independent laboratory approved by Engineer. Perform tests in accordance with ASTM Standards if specified, or other applicable standards if no reference is included.
3. Field Tests – Conduct field tests of piping systems, sewers, drains, manholes, and similar facilities where this type of test is specified and/or required by Engineer. Field tests include determination of performance, deflection, function, tightness, leakage or other special requirements. Perform tests in accordance with applicable standards and test codes. Provide all tools, equipment, instruments, personnel and other facilities required for satisfactory setup and completion of each test. Field tests will be witnessed by representatives of Owner for verification.
4. Field Compaction Tests – (Relative density and moisture tests) Perform field compaction tests by nuclear density method and submit reports where this type of test is specified and/or required by Engineer to determine if specified compaction has been achieved. Perform tests in accordance with ASTM Standards if specified, or other applicable standards if no reference is included. Scarify and re-compact as required to achieve specified density if any compaction tests reveal that fill or backfill is not compacted as specified. Perform additional compaction tests as directed by Engineer to verify proper compaction.
5. Laboratory Compaction Tests – Perform laboratory compaction tests to determine optimal moisture content at which a given soil type will become most dense and achieve maximum dry density in accordance with appropriate ASTM Designations specified. Perform Proctor Compaction Tests on each soil type encountered by same independent lab to perform “Field Compaction Tests”.
6. Aggregate Tests – Test aggregates used for aggregate base, surface, or shoulder to determine compliance with specified gradation, percent crushing, and aggregate quality requirements. Aggregate tests shall be made by an independent laboratory approved by Engineer. Perform tests in accordance with ASTM Standards if specified, or other applicable standards if no reference is included. Perform at least one set of tests for each class of aggregate material proposed for incorporation into the Work.
7. Concrete Tests – Mold one set of three (3) standard cylinders for first load each day per mix where at least 50 cubic yards of concrete is to be placed. If more than 50 cubic yards of concrete is placed during any given day, mold one set of three (3) standard cylinders for every 200 cubic yards or portion thereof. Record slump, temperature, and air content for each cylinder as well. Test each set for 28-day compressive strength.

B. See individual specification sections for testing and inspection required.

C. Testing Agency Duties:

1. Test samples of mixes submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests and inspections required by Engineer.
7. Submit reports of all tests/inspections specified.

D. Limits on Testing/Inspection Agency Authority:

1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

E. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.

5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- F. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Engineer.
- G. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 4100
REGULATORY REQUIREMENTS
PART 1 GENERAL

SUMMARY

- 1.01 *Regulatory requirements applicable to this project are the following:*
- 1.02 *29 CFR 1910 - Occupational Safety and Health Standards; Current Edition.*
- 1.03 *Minnesota Department of Transportation Standard Specifications for Construction; current edition.*
- 1.04 *Minnesota Manual for Uniform Traffic Control; current edition*
- 1.05 *Minnesota Department of Transportation Standard Specifications for construction; current edition including all supplements and amendments attached thereto.*
- 1.06 *Minnesota Department of Transportation Traffic Control Manual; current edition.*
- 1.07 *City Engineers Association of Minnesota Specifications; current edition.*

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED
END OF SECTION

**SECTION 01 4216
DEFINITIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

- A. Furnish: To supply, deliver, unload, and inspect for damage.
- B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
- C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- D. Provide: To furnish and install.
- E. Supply: Same as Furnish.

1.03 MNDOT DEFINITIONS MODIFICATION

- A. Where the Minnesota Department of Transportation Standard Specifications for Construction are referred to herein, the following definitions shall be modified:
 - 1. Commissioner: All references to Commissioner shall mean Owner or his authorized representative.
 - 2. Contracting Authority: All references to Contracting Authority shall mean the Owner.
 - 3. Department: All references to the Department shall mean the Owner or their authorized representative. References to the Department's Manuals or Publications shall be those documents prepared by or published on behalf of the Minnesota Department of Transportation, current edition.
 - 4. State: All references to State shall mean the Owner, acting through its authorized representatives.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 4219
REFERENCE STANDARDS
PART 1: GENERAL

SECTION INCLUDES

1.01 *Reference standards full title and edition shall be current edition at time of bidding.*

DEFINITIONS – (NOT USED)

PRICE AND PAYMENT PROCEDURES – (NOT USED)

REFERENCE SPECIFICATIONS

4.01 *MnDOT – Minnesota Department of Transportation*

- A. MnDOT Standard Specification 2020
- B. MnDOT Supplemental Specification 2022
 - 1. MnDOT Section 1515 – Control of Haul Roads
 - 2. MnDOT Section 2051 – Maintenance and Restoration of Haul Roads
 - 3. MnDOT Section 2101 – Clearing and Grubbing
 - 4. MnDOT Section 2105 – Excavation and Embankment
 - 5. MnDOT Section 2112 – Subgrade Preparation
 - 6. MnDOT Section 2118 – Aggregate Surfacing
 - 7. MnDOT Section 2130 – Application of Water for Dust Control
 - 8. MnDOT Section 2211 – Aggregate Base
 - 9. MnDOT Section 2501 - Pipe Culverts
 - 10. MnDOT Section 2506 – Manholes and Catch Basins
 - 11. MnDOT Section 2511 - Riprap
 - 12. MnDOT Section 2573 – Storm Water Management
 - 13. MnDOT Section 2574 – Soil Preparation
 - 14. MnDOT Section 3138 - Aggregate for Surface and Base Courses
 - 15. MnDOT Section 3149 - Granular Materials
 - 16. MnDOT Section 3601 – Riprap Material
 - 17. MnDOT Section 3733 - Geotextiles
 - 18. MnDOT Standard Plates

- C. MnDOT Standard Plates

4.02 *AASHTO – American Association of State Highway and Transportation Officials*

- A. AASHTO M36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains
- B. AASHTO M170 – Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- C. AASHTO M206 – Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
- D. AASHTO M207 – Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
- E. AASHTO M218 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized), for Corrugated Steel Pipe
- F. AASHTO M252 - Corrugated Polyethylene Drainage Pipe [75- to 250-mm (3- to 10-in.) Diameter]
- G. AASHTO M294 – Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- H. AASHTO M330 – Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- I. AASHTO Section 12 – Buried Structures and Tunnel Liners

- 4.03 *ACI – American Concrete Institute International*
 - A. ACI 530.1 - Specification for Masonry Structures and Companion Commentaries
- 4.04 *ASCE – American Society of Civil Engineers*
 - A. ASCE Section 6 - Specification for Masonry Structures
 - B. B.
- 4.05 *ASTM A Series*
 - A. ASTM A48 - Standard Specification for Gray Iron Castings
 - B. ASMT A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- 4.06 *ASTM C Series*
 - A. ASTM C76 - Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
 - B. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
 - C. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
 - D. ASTM C506 – Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
 - E. ASTM C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
 - F. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - G. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 - H. ASTM C1479 – Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
 - I. ASTM C1821 – Installation of Underground Circular Precast Concrete Manhole Structures
- 4.07 *ASTM D Series*
 - A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
 - B. ASTM D1784 - Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
 - C. ASTM D2321 - Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
 - D. ASTM D3034 - Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
 - E. ASTM D3212 - Joints for Drainage and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - F. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells
- 4.08 *ASTM F Series – ASTM International*
 - A. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - B. ASTM F667 - 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
 - C. ASTM F2306 - 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
 - D. ASTM F2648 - 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications
 - E. ASTM F2764 - 6 to 60 in. [150 to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
 - F. ASTM F2881 - 12 to 60 inch [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications
- 4.09 *CEAM – City Engineer’s Association of Minnesota*

- A. CEAM Section 2621 – Sanitary Sewer and Storm Sewer Installation
- 4.10 EJCDC – Engineers’ Joint Contract Documents Committee
 - A. EJCDC C-430 – Bid Bond, Penal Sum Form
 - B. EJCDC C-610 – Performance Bond
 - C. EJCDC C-612 – Warranty Bond
 - D. EJCDC C-615 – Payment Bond
 - E. EJCDC C-620 – Contractors Application for Payment
 - F. EJCDC C-625 – Certificate of Substantial Completion
 - G. EJCDC C-700 – General Conditions
- 4.11 TMS – The Masonry Society
 - A. TMS Section 402/602 – Specification for Masonry Structures

SUBMITTALS – (NOT USED)

DELIVERY, STORAGE & HANDLING – (NOT USED)

QUALITY ASSURANCE

- 7.01 *For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes*
- 7.02 *Comply with the reference standard of date of issue current on date for receiving bids, except where a specific date is established by applicable code*
- 7.03 *Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding*
- 7.04 *Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Engineer shall be altered by Contract Documents by mention or inference otherwise in any reference document*

SITE CONDITIONS – (NOT USED)

TOLERANCES - (NOT USED)

WARRANTY – (NOT USED)

PART 2: PRODUCTS – (NOT USED)

PART 3: EXECUTION – (NOT USED)

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS
PART 1 GENERAL

SECTION INCLUDES

- 1.01 *Temporary utilities.*
- 1.02 *Temporary sanitary facilities.*
- 1.03 *Temporary Controls: Barriers and enclosures.*
- 1.04 *Security requirements.*
- 1.05 *Vehicular access and parking.*
- 1.06 *Waste removal facilities and services.*

RELATED REQUIREMENTS

- 2.01 *Section 01 5500 - Vehicular Access and Parking.*

TEMPORARY UTILITIES

- 3.01 *Provide and pay for electrical power, lighting, and water required for construction purposes.*
- 3.02 *Provide and pay for telephone service required for construction purposes.*
- 3.03 *Provide and pay for natural gas or liquid propane required for construction purposes.*
- 3.04 *Coordinate requirements and cost for usage of municipal water supply for construction purposes directly with applicable jurisdiction.*
- 3.05 *Provide temporary watermains and service per Section 33 1118.*

TEMPORARY SANITARY FACILITIES

- 4.01 *Provide and maintain required facilities and enclosures. Provide at time of project mobilization.*
- 4.02 *Maintain daily in clean and sanitary condition.*

BARRIERS

- 5.01 *Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.*
- 5.02 *Provide protection for plants designated to remain. Replace damaged plants.*
- 5.03 *Protect non-owned vehicular traffic, stored materials, site, and structures from damage.*

SECURITY

- 6.01 *Provide security and facilities to protect Work, and Owner's operations from unauthorized entry, vandalism, or theft.*

VEHICULAR ACCESS AND PARKING - SEE SECTION 01 5500

- 7.01 *Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.*
- 7.02 *Coordinate access and haul routes with governing authorities and Owner.*
- 7.03 *Provide and maintain access to fire hydrants, free of obstructions.*
- 7.04 *Provide means of removing mud from vehicle wheels before entering streets.*
- 7.05 *Designated existing on-site roads may be used for construction traffic.*
- 7.06 *Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.*

WASTE REMOVAL

- 8.01 *See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.*
- 8.02 *Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.*

8.03 *Provide containers with lids. Remove trash from site periodically.*

REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

9.01 *Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.*

9.02 *Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.*

9.03 *Clean and repair damage caused by installation or use of temporary work.*

9.04 *Restore existing facilities used during construction to original condition.*

9.05 *Restore new permanent facilities used during construction to specified condition.*

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 5500
VEHICULAR ACCESS AND PARKING
PART 1 GENERAL**

SECTION INCLUDES

- 1.01 *Preparation*
- 1.02 *Access roads.*
- 1.03 *Existing pavements and parking areas.*
- 1.04 *Material and debris storage and parking.*
- 1.05 *Flag persons.*
- 1.06 *Haul routes.*
- 1.07 *In-place traffic control.*
- 1.08 *Traffic control.*
- 1.09 *Temporary lane and roadway closure.*
- 1.10 *Maintenance.*
- 1.11 *Removal, repair.*
- 1.12 *Mud from site vehicles.*

DEFINITIONS - (NOT USED)

PRICE AND PAYMENT PROCEDURES

- 3.01 *Maintenance of traffic control and traffic control devices including approved temporary lane and roadway closure if applicable will be measured for payment only when and to the extent that the Proposal contains specific items therefore. Otherwise the required maintenance of traffic and traffic control devices is considered incidental to the project and no measurement will be made. When applicable, maintenance of traffic and traffic control devices will be measured on a LUMP SUM basis as described herein.*
- 3.02 *All costs of traffic control and traffic control devices as specified shall be considered incidental to the project without any direct compensation being made therefore. No measurement will be made of the various items that constitute Traffic Control but all such Work will be construed to be included in the single LUMP SUM payment under the Traffic Control Item included on the Proposal.*
- 3.03 *Section 01 1000 - Summary: access to site, work sequence, and occupancy.*
- 3.04 *MnDOT specification 1515 Control of Haul Roads shall apply except as modified herein.*
- 3.05 *Minnesota Manual on Uniform Traffic Control Devices, current edition, shall apply except as modified herein.*

SUBMITTALS

- 4.01 *Access roads that differ than the easement describe in the individual specifications.*

DELIVERY, STORAGE & HANDLING - (NOT USED)

QUALITY ASSURANCE - (NOTUSED)

SITE CONDITIONS

- 7.01 *Contractor shall maintain and restore all haul roads, to their previous state or better, that are used for the Work.*

WARRANTY - (NOT USED)

PART 2 PRODUCTS

MATERIALS

- 1.01 *Temporary Construction: Contractor's option.*

- 1.02 *Materials for Permanent Construction: As specified in product specification sections, including earthwork, paving base, and topping.*

SIGNS, SIGNALS, AND DEVICES

- 2.01 *All provided signs, signals, and related devices shall be in conformance with the Minnesota Manual on Uniform Traffic Control Devices.*
- 2.02 *Post Mounted and Wall Mounted Traffic Control and Informational Signs: As required by local jurisdictions.*
- 2.03 *Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.*
- 2.04 *Flag Person Equipment: As required by local jurisdictions.*

PART 3 EXECUTION

PREPARATION

- 1.01 *Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.*

ACCESS ROADS

- 2.01 *Use of designated existing on-site streets and driveways for construction traffic is permitted.*
- 2.02 *Tracked vehicles not allowed on paved areas.*
- 2.03 *Construct new temporary all-weather access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.*
- 2.04 *Extend and relocate as Work progress requires, provide detours as necessary for unimpeded traffic flow.*
- 2.05 *Location as approved by Engineer.*
- 2.06 *Provide unimpeded access for emergency vehicles. Maintain 20 foot width driveways with turning space between and around combustible materials.*
- 2.07 *Provide and maintain access to fire hydrants free of obstructions.*
- 2.08 *Provide and maintain access to residences and businesses.*

EXISTING PAVEMENTS AND PARKING

- 3.01 *Do not allow parking of vehicles or equipment in areas open to traffic which obstruct or interfere with the safe flow of traffic, obstruct traffic control devices, or interfere with the parking of local residents.*
- 3.02 *Arrange for temporary parking areas to accommodate use of construction personnel.*
- 3.03 *When site space is not adequate, provide additional off-site parking.*
- 3.04 *Locate as approved by Engineer.*

NEW PERMANENT PAVEMENTS AND PARKING

- 4.01 *Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.*
- 4.02 *Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.*

MATERIAL AND DEBRIS STORAGE AND PARKING

- 5.01 *The Contractor shall not be permitted to deposit or store construction materials or debris in areas open to traffic which obstruct or interfere with the safe flow of traffic.*
- 5.02 *Provide signage, flaggers, etc. as necessary whenever materials or equipment are delivered for the project in areas open to traffic with the potential to interfere with the safe flow thereof.*
- 5.03 *Contractor may store materials on property outside of the construction limits **if and only if** a Landowner Agreement Form has been signed by both parties prior to use. A copy of the agreement shall be provided to the Engineer (Attachement 1)*

CONSTRUCTION PARKING CONTROL

- 6.01 *Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.*
- 6.02 *Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.*
- 6.03 *Prevent parking on or adjacent to access roads or in non-designated areas.*

FLAG PERSONS

- 7.01 *Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.*

HAUL ROUTES

- 8.01 *Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.*
 - A. *Contractor may gain access through additional properties but shall have the Landowner Agreement Form signed by both parties prior to use. A copy of the agreement shall be provided to the Engineer. (Attachment 2)*
- 8.02 *As a minimum, the Owner and Engineer shall approve of all haul routes prior to the start of Work on this project.*
- 8.03 *Confine construction traffic to designated haul routes.*
- 8.04 *Owner may assess a fee in the amount of \$500 for each day that the Contractor occupies or travels on a non-designated haul route. The fee will be in addition to damages assessed against the Contractor to repair damaged roadways.*
- 8.05 *Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.*
- 8.06 *Maintain and repair all haul routes, including, but not limited to blading, patching, signing, graveling, and dust control. This Work will be at the Contractor's expense, without any direct compensation being made.*

INPLACE TRAFFIC CONTROL

- 9.01 *Existing traffic control shall remain in place and be protected by the Contractor for the duration of the Work, except as otherwise authorized by the Engineer. Traffic control authorized for temporary removal necessitated by construction shall be carefully removed and stored by the Contractor or delivered to the authority having jurisdiction over the traffic control for temporary storage.*
- 9.02 *Where it is necessary to remove "STOP" or prohibition traffic control signs on roads open to traffic, the Contractor shall provide qualified flag persons as necessary until such time as the signs are re-installed or as otherwise directed by the Engineer.*
- 9.03 *Where it is necessary to remove traffic control signs for warning or regulation of traffic on roads open to traffic, the Contractor shall relocate or temporarily mount the sign as directed by the Engineer.*
- 9.04 *If any traffic control device is damaged or lost during temporary removal or reinstallation, the cost for replacement thereof shall be assessed to the Contractor.*
- 9.05 *All removed traffic control not being replaced as part of this contract or reinstalled by others, shall be reinstalled by the Contractor in compliance with the Minnesota Manual on Uniform Traffic Control Devices, unless otherwise directed by the Engineer.*
- 9.06 *No additional compensation will be made to the Contractor for any expenses incurred in removing, protecting, or replacing existing traffic control as provided for herein, nor for any delays, inconvenience, or damage sustained due to any special construction required in prosecuting the Work in the presence of existing traffic control.*

TRAFFIC CONTROL

- 10.01 *Furnish, install, and maintain construction signs, barricades with weights, traffic making tape, warning lights, flagmen, trailers, cones and all other traffic control devices at approaches to the site, on site, at crossroads, detours, parking areas, and elsewhere as needed to warn, protect, and direct the public from hazardous protrusions, materials, excavations, etc. resulting directly or indirectly from the construction, from the start of operations to the final completion thereof in accordance with the Contract documents, the Minnesota Manual on Uniform Traffic Control Devices, and the MnDOT Standard Signs Manual Parts I, II, and III.*
- 10.02 *Keep the portions of the project being used by public traffic, whether it be through or local traffic, in such condition that the traffic will be adequately accommodated at all times. The Contractor shall provide and maintain temporary approaches, crossings, and intersections with trails, roads, streets, businesses, parking lots, residences, garages, farms, and other abutting property in acceptable condition, including furnishing and placing temporary surfacing as necessary, but will not be required to remove snow. No direct compensation will be made for the work or materials required to maintain traffic unless the Proposal contains specific items therefore.*
- 10.03 *Relocate as Work progresses, to maintain effective traffic control.*
- 10.04 *If Contractor fails to maintain those portions of the project being used by public traffic within a reasonable period of time in the opinion of the Engineer, the Engineer shall order the necessary work done by others, and the cost for said work shall be deducted from monies otherwise due the Contractor.*
- 10.05 *Inspect traffic control devices daily and check warning lights weekly for proper operation and clean as required. Immediately replace all damaged, moved or ineffective traffic barriers, warning signs, and warning lights.*
- 10.06 *If Contractor fails to furnish, install, maintain, or remove required traffic control devices, the Engineer shall order the necessary work done by others, and the cost for said work shall be deducted from monies otherwise due the Contractor.*
- 10.07 *Maintain all concrete and bituminous surfaced roadways open to traffic in a clean condition free from dirt, debris, etc. at all times. Work may require the use of a pickup broom for which no direct compensation will be made.*
- 10.08 *If Contractor fails to maintain concrete and bituminous surfaced roadways, which are open to traffic, in a clean condition, the Engineer shall order the necessary work done by others, and the cost for said work shall be deducted from monies otherwise due the Contractor.*
- 10.09 *When open excavations in excess of 2-inches in depth exist adjacent to roadways open to traffic, furnish, install, maintain, and remove as a minimum one "Road Work Ahead" sign as advance warning for both directions of travel and delineate the work with Type "B" channelizers at a spacing of 25 feet for areas with travel speeds of 40 mph or less and at 50 feet for areas with travel speeds of 45 mph or more.*
- 10.10 *When utility trench excavations exist adjacent to roadways open to traffic, the Contractor shall not allow vehicular traffic closer than a projection of a 1:1 slope from the bottom of the excavated trench where possible. The Contractor shall provide all necessary sheeting and shoring to assure no lateral displacement of existing roadways occurs during the installation of utilities. No direct compensation will be made for the work or materials required to protect the traveling public or the Work where utility trenches exist adjacent to roadways unless the Proposal contains specific items therefore.*
- 10.11 *Show diligence in backfilling excavations as rapidly as possible. Excavations which are not completely backfilled by the end of the work day shall be adequately protected with barricades and/or orange snow fencing to restrict access to the excavated trench by the public. Adequately*

secured fencing and barricades at a sufficient distance from the edge of the trench to assure that pedestrian and vehicular traffic will not affect the stability of the excavation.

- 10.12 *Furnish and store at least four Type 3 barricades at a convenient location within the project limits to be used at the direction of the Engineer and/or in the case of an emergency.*

TEMPORARY LANE AND ROADWAY CLOSURE

- 11.01 *Lane and roadway closures will not be allowed during inclement weather, nor any other time when in the opinion of the Engineer the lane or roadway closure is a hazard to traffic.*
- 11.02 *When temporary lane or roadway closure is allowed, the Contractor shall submit to Engineer a summary of traffic control methods and devices necessary for review of compliance with the Specifications prior to the start of the Work. The Contractor shall modify the traffic control plan as necessary if the Engineer determines it to be noncompliant.*
- 11.03 *Approval of traffic control methods and devices as provided for herein shall not relieve the Contractor of responsibility for protecting the Work, the workers, or the traveling public.*
- 11.04 *The Contractor shall furnish, install, maintain, and remove a minimum of four Type 3 barricades with one "Road Closed" sign and a minimum of one post or stand mounted "Road Closed Ahead" sign at each intersecting street to a roadway closure. All barricades and signs shall have a minimum of one Type "A" amber flashing light.*
- 11.05 *Temporary lane and roadway closure shall only be permitted during those hours and at those locations specified herein or approved by the Engineer. Requests for temporary lane and roadway closure shall be made at least 48 hours prior to such closure for Engineers approval.*
- 11.06 *The Contractor shall submit a notice of roadway closure to all affected residences, Police and Sheriff's Department, and local Fire Department at least 24 hours prior to such approved closure.*

MAINTENANCE

- 12.01 *Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud, snow, and ice.*
- 12.02 *Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.*

REMOVAL, REPAIR

- 13.01 *Remove temporary roads when permanent paving is usable.*
- 13.02 *Repair existing facilities damaged by use, to original condition.*
- 13.03 *Remove equipment and devices when no longer required.*
- 13.04 *Repair damage caused by installation.*

MUD FROM SITE VEHICLES

- 14.01 *Provide means of removing mud from vehicle wheels before entering streets.*

END OF SECTION

**SECTION 01 5500.01
LANDOWNER AGREEMENT FORM (STORAGE FACILITY)**

I (Landowner Name) _____ give the right for (Contractor Name) _____ to store equipment, tools and any necessary products that will be used on the Project on my land along (Branch Name) _____ which is located on the (Project Name) _____ project in Section _____ of (Township Name) _____ Township. I (Landowner) acknowledge that heavy machinery will disturb my property in the described location above, which will be included in construction damages for the Project and that the Contractor shall restore the Storage Facility to its previous state. A copy of this agreement form shall be provided to the Engineer prior to use of Storage Facility.

Contractor's Name (Print Name)

Landowner's Name (Print Name)

Contractor's Signature

Landowner's Signature

SECTION 01 5500.02
LANDOWNER AGREEMENT FORM (HAUL ROAD/ ACCESS ROAD)

I (Landowner Name) _____ give the right for (Contractor Name)
_____ to use (Describe portion of land) _____

_____ of my land to access and/or haul material for the (Project Name) _____
_____ Project. I (Landowner) acknowledge that heavy machinery will disturb my property in the described location above, which will be included in construction damages for the Project and that the Contractor shall restore the Haul/Access Road to its previous state. A copy of this agreement form shall be provided to the Engineer prior to use of Haul/Access Road.

Contractor's Name (Print Name)

Landowner's Name (Print Name)

Contractor's Signature

Landowner's Signature

SECTION 01 5713
TEMPORARY STORM WATER MANAGEMENT & EROSION AND
SEDIMENT CONTROL
PART 1 GENERAL

SECTION INCLUDES

- 1.01 *Prevention of erosion due to construction activities.*
- 1.02 *Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.*
- 1.03 *Restoration of areas eroded due to insufficient preventive measures.*
- 1.04 *Prevention of air, land, and water pollution due to construction activities.*
- 1.05 *Control of storm water runoff and project related discharges associated with dewatering and basin draining activities.*
- 1.06 *Implementation of SWPPP in compliance with MPCA General Permit.*
- 1.07 *Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.*

DEFINITIONS - (NOT USED)

PRICE AND PAYMENT PROCEDURES

- 3.01 *Silt Fence:*
 - A. Measurement shall be on a linear foot (LF) unit price basis when acceptably installed and maintained. Payment at the unit price bid shall be compensation in full for installing, cleaning, and removing the material once construction is completed, and will be made in partial payment amounts for satisfactory completion of the following Work:
 - 1. 25 percent - Initial Installation.
 - 2. 25 percent - Maintenance during first half of Contract period.
 - 3. 50 percent - Maintenance during last half of Contract period and removal of device.
- 3.02 *Inlet Protection:*
 - A. Measurement shall be on a per EACH unit price basis when acceptably installed and maintained. Payment on the unit price bid shall be compensation in full for installing, cleaning, and removing the material once construction is completed, and will be made in partial payment amounts for satisfactory completion of the following Work:
 - 1. 25 percent - Initial Installation.
 - 2. 25 percent - Maintenance during first half of Contract period.
 - 3. 50 percent - Maintenance during last half of Contract period and removal of device.
- 3.03 *The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for associated temporary storm water management, erosion and sediment control, pollution control, and excavation items. Such items of Work include but are not limited to:*
 - A. Complying with MPCA General Permit, where applicable.
 - B. Maintaining clean exit areas or roads from the site.
 - C. Sweeping adjacent streets clean of excess soil.

REFERENCE STANDARDS

- 4.01 *MnDOT Section 1717 - Air, Land and Water Pollution.*
- 4.02 *MnDOT Section 2573 - Stormwater Management.*
- 4.03 *MPCA General Permit.*
- 4.04 *Protecting Water Quality in Urban Areas - Best Management Practices for Dealing with Storm Water Runoff from Urban, Suburban and Developing areas of Minnesota; MPCA, March 2000.*

4.05 *Minnesota Stormwater Best Management Practices Manual; September 2011.*

DEFINITIONS

5.01 *BMPs: Best Management Practices.*

5.02 *MPCA: Minnesota Pollution Control Agency.*

5.03 *MPCA General Permit: MPCA Permit No: R100001; General Permit Authorization to Discharge Stormwater Associated with Construction Activity Under the National Pollutant Discharge Elimination System / State Disposal System Program, Issued August 2013.*

5.04 *NOT: Notice of Termination to MPCA General Permit.*

5.05 *NPDES: National Pollutant Discharge Elimination System*

5.06 *Operator: Shall be Contractor (for MPCA permit process).*

5.07 *SWPPP: Storm Water Pollution Prevention Plan.*

PERFORMANCE REQUIREMENTS

6.01 *For operations that disturb 1 acre or more of land area, comply with requirements of MPCA General Permit.*

6.02 *Do not begin clearing, grading, or other work involving disturbance of ground surface cover until MPCA General Permit has been obtained; furnish documentation required to obtain permit.*

6.03 *Owner shall:*

- A. Obtain MPCA General Permit and pay for securities required.
- B. Withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.

6.04 *Contractor shall:*

- A. Cosign MPCA General Permit with Owner.
- B. Comply with permit requirements.
- C. Conduct required inspections.
- D. Maintain inspection log.
- E. Maintain SWPPP on site (See MPCA website for more information: www.pca.state.mn.us).
- F. Make SWPPP available to federal, state, and local officials within 72 hours upon request for duration of permit and for 3 years following NOT.
- G. Submit NOT within 30 days of final stabilization.

6.05 *Conduct operations to prevent, control and abate the pollution of air, land and water in accordance with adopted and established federal, state, and local rules, regulations and standards of the following:*

- A. Minnesota Department of Natural Resources.
- B. Minnesota Pollution Control Agency.
- C. Minnesota Department of Transportation.
- D. U.S. Army Corps of Engineers.

6.06 *Comply with regulatory agencies for fertilizer and herbicide composition.*

SUBMITTALS

7.01 *See Section 01 3000 - Administrative Requirements, for submittal procedures.*

7.02 *Product Data: Provide manufacturer's data on BMPs and accessories.*

7.03 *Manufacturer's Certificate: Certify that products meet or exceed specified requirements.*

7.04 *Preliminary Erosion and Sedimentation Control Plan:*

- A. Submit not less than 2 weeks prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
- B. Include:
 - 1. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.

2. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 3. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 4. Preliminary schedule of temporary preventive measures, in relation to ground disturbing activities.
 5. Other information required by law.
 6. Format required by law is acceptable, provided any additional information specified is also included.
- C. Obtain approval of Plan by authorities having jurisdiction and Owner.
- 7.05 *Erosion and Sedimentation Control Schedule:*
- A. Submit weekly.
 - B. Include:
 1. Proposed installations and timing of installation.
 2. Grading operations and incorporation of erosion control.
 3. Repair or maintenance required on erosion control installations.
 4. Proposed measures during periods of suspension of Work.
- 7.06 *Water Treatment Plan: When applicable.*
- 7.07 *Inspection Reports:*
- A. Submit report of each inspection for Project closeout or more often as requested by Engineer.
 - B. Include:
 1. Condition of preventative measures.
 2. Required maintenance or repair.
- 7.08 *Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.*

DELIVERY, STORAGE, AND HANDLING

- 8.01 *Seed:*
- A. Deliver in sealed containers. Opened or damaged packaging is not acceptable. Containers shall show percentage of seed mix, year of production, net weight, date of packaging, and location of packaging. Seed shall have been tested within six months prior to date of seeding.
- 8.02 *Fertilizer:*
- A. Deliver in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

MATERIALS

- 1.01 *Water Treatment: MnDOT 3875*
- 1.02 *Temporary Mulch: MnDOT 3882, Type 3 or Type 7*
- 1.03 *Silt Fence:*
- A. Type Machine Sliced (MS) consisting of a woven geotextile fabric installed by machine and supported by steel posts.
 1. Fabric: MnDOT Specification 3886
 2. Posts: MnDOT 3403, steel with weight of 1.25 lb/ft, length of 5 feet, embedment of 24 inches, and spacing of 6 feet.
 3. Fasteners: Plastic zip ties with tensile strength of at least 50 lb.
 - B. Type Pre-Assembled (PA) consisting of a woven geotextile fabric supported by wood posts pre-attached to the fabric.

1. Fabric: MnDOT Specification 3886
 2. Posts: 2-inch by 2-inch hardwood with length of 4 feet, embedment of 18 inches, and spacing of 5 feet.
- 1.04 *Sediment Control Log: MnDOT 3897*
- 1.05 *Erosion Control Blanket: MnDOT 3885*
- A. Category 1: Will degrade in 6 weeks. Generally used in mowed areas next to shoulder, residential lawns, and park areas.
 - B. Category 3: For slopes 3:1 to 2:1 (H:V) and less than 50 feet long; ditch bottoms with gradients 3 percent or less and flow velocities 6.5 ft/s and less; and concentrated flow areas such as edge drains.
 - C. Category 4: For slopes 2:1 (H:V) and steeper, ditch bottoms 4 percent and less with flow velocities less than 7 ft/s; and areas with higher volumes of concentrated flow such as bridge side or end slopes to take drainage from the of curbs.
 - D. Category 5: For stream bank restoratation areas.
- 1.06 *Flotation Silt Curtain: MnDOT 3887*
- 1.07 *Flocculants: MnDOT 3898*
- 1.08 *Filter Berm: MnDOT 3874*
- 1.09 *Temporary Seed: MnDOT 3876*
- A. Grass seed for temporary cover crop shall be appropriate to the planting season and one of the following approved MnDOT mixes:
 1. 21-111 (Oats Cover Crop); apply at rate of 100 lb/acre.
 2. 21-112 (Winter Wheat Cover Crop); apply at rate of 100 lb/acre.
 3. 21-113 (Soil Building Cover Crop); apply at rate of 110 lb/acre.
- 1.10 *Hydraulic Erosion Control Products: MnDOT 3884*
- 1.11 *Temporary Rock Construction Exit:*
- A. Crushed Stone: MnDOT 3601, Class I riprap
 - B. Geotextile Fabric. MnDOT 3733, Type 5

PART 3 EXECUTION

EROSION CONTROL SUPERVISOR

- 1.01 *Provide Erosion Control Supervisor with valid Minnesota Construction Site Management certification, authorized to represent Contractor on matters pertaining to Erosion and Stormwater Management, Work in public waters, MPCA General Permit compliance, and available to the work site within 24 hours of initial disturbance and daily when work is taking place until final stabilization.*
- 1.02 *Duties of the Erosion Control Supervisor include the following:*
- A. Implement quality control program,
 - B. Ensure proper installation, functionality, and maintenance, clean-up, and removal of all erosion and sediment control BMPs and in accordance with manufacturer's recommendations,
 - C. Implement erosion and sediment control schedule,
 - D. Coordinate Work of subcontractors and ensure full execution of erosion and sediment control measures for each operation and stage of Work,
 - E. Oversee Work of subcontractors and ensure subcontractors undertake erosion and sediment preventive measures at each stage of the Work,
 - F. Prepare required weekly erosion control schedule and inspections with dates and times,
 - G. Attend construction meetings to discuss erosion control schedule and inspections,

- H. Prepare erosion and sediment control Site Management Plans as required by the Contract Documents or as directed by Engineer,
- I. Provide for erosion and sediment control methods for temporary work not shown on the Drawings,
- J. Ensure effective preventative BMPs are in place, recommend changes to SWPPP for Engineer's approval, and amend SWPPP to document changes,
- K. Ensure acquisition of and compliance with applicable permits for borrow pits, dewatering, and temporary work in rivers, lakes and streams,
- L. Ensure full installation of erosion and sediment control work before suspension of the Work,
- M. Coordinate with federal, state, and local regulatory agencies on resolution of erosion and sediment control issues resulting from the Work,
- N. Ensure that proper cleanup occurs from vehicle tracking on paved surface locations where sediment leaves the right-of-way,
- O. Ensure daily compliance with environmental laws, permits, and SWPPP narrative requirements, and
- P. Ensure certification of installers for operations in accordance with MnDOT 2573.2.A.2, "Certified Installers."

CERTIFIED INSTALLERS

2.01 *Provide a certified installer to install or to direct installations of erosion or sediment control practices and for the following:*

- A. Seeding,
- B. Sodding,
- C. Mulching,
- D. Silt fence or other perimeter sediment control device installations,
- E. Rolled Erosion Control Products installation,
- F. Hydraulic Erosion Control Product installation,
- G. Silt curtain installation,
- H. Ditch check installation, and
- I. Compost installation.

2.02 *Provide at least one installer with a valid Minnesota Inspector or Installer Certification at time of installation.*

2.03 *Failure to provide required certified installer may result in Engineer rejecting the Work as unauthorized work in accordance with the Contract Documents.*

SCOPE

3.01 *Provide access for and cooperate with representatives of Owner and/or Engineer and meet any other requirements if so directed.*

3.02 *Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.*

3.03 *Install sediment control measures down gradient before, or in conjunction, with soil disturbing activities.*

3.04 *Schedule Work to minimize amount of time disturbed soil surfaces are left exposed in accordance with MPCA General Permit requirements.*

3.05 *Construct, install, and maintain temporary storm water management & erosion and sediment control measures as required by the Contract Documents and in accordance with permits required for the Work.*

- 3.06 *Adjust installation location of temporary storm water management and sediment control devices as necessary to maximize effectiveness of each device.*
- 3.07 *Recover sediment and restore property to pre-existing conditions for loss of sediment off the project at no additional cost to Owner.*
- 3.08 *In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.*
- 3.09 *Schedule and phase construction in and around Areas of Environmental Sensitivity (AES), as shown on the Drawings to minimize potential of sediment entering into these areas. Use measures such as hand clearing and grubbing, limiting bare soil exposure time, expediting construction activities, and immediately establishing final vegetation to minimize sediment loss potential.*
- 3.10 *Construct temporary sediment basins concurrently with start of soil disturbing activities. Direct storm water runoff from localized watershed to basins. Mulch, seed, or both, exposed side slopes of basins meeting requirements of the MPCA General Permit or within 14 calendar days.*
- 3.11 *Provide a water treatment plan for pumping or dewatering of turbid or sediment laden water. Submit water treatment plan to Engineer before pumping. Do not begin work until Engineer approves water treatment plan. Contractor may include use of sediment traps, vegetative filter strips, flocculants, or other water treatments in accordance with MnDOT 3875, "Water Treatments," in water treatment plan.*
- 3.12 *Protect discharge location of any pumping or dewatering process from erosion. Unless otherwise required by the Contract Documents, provide and install BMPs to control erosion and suspend sediment during dewatering or pumping operation.*
- 3.13 *Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.*
- A. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
- B. Anticipate runoff volume due to most extreme short term and 24-hour rainfall events that might occur in 25 years.
- 3.14 *Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.*
- A. Control movement of sediment and soil from temporary stockpiles of soil.
- B. Prevent development of ruts due to equipment and vehicular traffic.
- C. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- 3.15 *Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.*
- A. Prevent windblown soil from leaving the project site.
- B. Prevent tracking of mud onto public roads outside site.
- C. Prevent mud and sediment from flowing onto sidewalks and pavements.
- D. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- 3.16 *Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.*
- A. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

- B. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- 3.17 *Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.*
 - A. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- 3.18 *Open Water: Prevent standing water that could become stagnant.*
- 3.19 *Shape exposed soil and incorporate temporary and permanent erosion control measures as approved by Engineer before suspending grading operations.*

INSTALLATION

- 4.01 *Temporary Rock Construction Exit: Traffic-bearing aggregate surface.*
 - A. Width: As required; 25 feet, minimum.
 - B. Length: 40 feet, minimum.
 - C. Provide at each construction exit to public right-of-way.
 - D. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
 - E. Excavate minimum of 8 inches.
 - F. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
 - G. Place and compact at least 8 inches of MnDOT Class I riprap.
- 4.02 *Linear Sediment Barriers: Made of silt fences or sediment control logs.*
 - A. Provide linear sediment barriers:
 - 1. Along downhill perimeter edge of disturbed areas, including soil stockpiles, and parallel to contour of land, with ends wrapped uphill to prevent flow around them.
 - B. Space sediment barriers with the following maximum slope length upslope from barrier:
 - 1. Slope of Less Than 2 Percent: 100 feet..
 - 2. Slope Between 2 and 5 Percent: 75 feet.
 - 3. Slope Between 5 and 10 Percent: 50 feet.
 - 4. Slope Between 10 and 20 Percent: 25 feet.
 - 5. Slope Over 20 Percent: 15 feet.
- 4.03 *Silt Fence*
 - A. Store and handle fabric in accordance with ASTM D4873.
 - B. Install with top of fabric at nominal height and embedment as specified.
 - C. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
 - D. Type Machine Sliced (MS)
 - 1. Mechanically install the geotextile with the salvaged edge on top.
 - 2. Place geotextile directly behind the soil-slicing blade as it works to achieve consistent placement and depth. Do not plow soil if using the slicing method.
 - 3. Roll the wheels of a tractor or skid steer on each side of the geotextile at least 2 times to compact the soil immediately next to the geotextile.
 - 4. Install posts adjacent to the back face of the geotextile with the studs facing away from the geotextile fabric.
 - 5. Secure each post by inserting three plastic zip ties through the geotextile.
 - E. Type Hand Installed (HI)
 - 1. Install the geotextile by hand in areas inaccessible by a machine.

2. Place the geotextile into a trench 6 in deep and 6 in wide with the bottom edge of the geotextile wrapping back up to the soil surface. Backfill and tamp the trench for compaction.
 3. Install posts adjacent to the back face of the geotextile with the studs facing away from the geotextile fabric.
 4. Secure each post by inserting three plastic zip ties through the geotextile.
- F. Type Preassembled (PA):
1. Install preassembled silt fence with attached wooden stakes in small areas less than 1/4 acre.
 2. Pound stakes at least 18 inches into the ground.
 3. Install geotextile with the salvaged edge on top.
 4. Place the bottom edge of the geotextile into a trench 6 in deep and 6 in wide.
 5. Backfill and tamp the trench for compaction.
- 4.04 *Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:*
- A. Manufactured drop in product: As detailed on drawings.
 - B. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
 - C. Straw bale row blocking entire inlet face area; anchor into pavement.
- 4.05 *Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.*
- 4.06 *Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.*
- 4.07 *Soil Stockpiles: Protect using one of the following measures:*
- A. Cover with polyethylene film, secured by placing soil on outer edges.
 - B. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.
- 4.08 *Mulching: Use only for areas that may be subjected to erosion for less than 6 months.*
- A. Dry Straw and Hay:
 1. Apply 2 tons per acre; anchor using dull disc harrow.
 - B. Wood Waste:
 1. Use only on slopes 3:1 or flatter; no anchoring required.
 2. Apply 6 to 9 tons per acre.
 - C. Erosion Control Matting: Comply with manufacturer's instructions.
- 4.09 *Temporary Seeding: Use where temporary vegetated cover is required.*
- A. When hydraulic seeder is used, seedbed preparation is not required.
 - B. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 - C. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
 - D. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
 - E. Incorporate fertilizer into soil before seeding.
 - F. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
 - G. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.

H. Repeat irrigation as required until grass is established.

EMERGENCY WORK

5.01 *Conduct Emergency corrective work followed by installation of necessary preventative measures within 24 hours written notice from Engineer of sudden occurrence of a serious and urgent nature that is beyond normal maintenance of preventative measures, and which requires immediate mobilization and movement of necessary personnel, equipment, and materials to emergency site.*

MAINTENANCE

6.01 *Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.*

6.02 *Repair deficiencies immediately.*

6.03 *Silt Fences:*

A. Promptly replace fabric that deteriorates unless need for fence has passed.

B. Remove silt deposits that exceed one-third of the height of the fence.

C. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

6.04 *Clean out temporary sediment control structures weekly and relocate soil on site.*

6.05 *Place sediment in appropriate locations on site; do not remove from site.*

6.06 *Inspect vehicle exit areas from site daily and keep clean of excess soil by routine sweeping.*

6.07 *Maintain temporary preventive measures until permanent measures have been established.*

6.08 *Should Contractor fail to maintain preventive measures, Owner may order the Work be completed by others, and deduct associated costs from the Contract amount.*

CLEAN UP

7.01 *Remove and dispose of temporary measures after permanent measures have been installed, unless permitted to remain by Engineer.*

7.02 *Clean out temporary sediment control structures that are to remain as permanent measures.*

7.03 *Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.*

END OF SECTION

**SECTION 01 6000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Procedures for Owner-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Document 00 2113 - Instructions to Bidders: Product options and substitution procedures prior to bid date.
- B. Section 01 4000 - Quality Requirements: Product quality monitoring.
- C. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 EXISTING MATERIALS

- A. Materials found on the Right of Way or on other land acquired for the Project shall not be destroyed or used by the Contractor for any other purposes than those specified in the Contract without the consent of the Owner.
- B. Engineer may authorize Contractor to make temporary use of materials salvaged for Owner from existing structures. Contractor, however, is responsible for all damages to the materials so used. Contractor shall repair, replace, or otherwise make good by acceptable means the materials damaged by this use, or Owner will deduct from any moneys due or becoming due, an amount equivalent to the reasonable value or replacement cost of the material.
- C. Engineer may authorize the use of acceptable material found on the Project as a substitute for material that would otherwise have to be furnished by Contractor from outside sources. Authorization to remove and use the substitute material for unspecified purposes to the Contractor's advantage will be at the sole discretion of the Engineer and will be subject to the conditions imposed by the Engineer as well as to all other provisions of the Contract. The material is made available for use to best advantage and without charge to the Contractor in the interest of providing maximum utilization of materials existing on the Project, but with the understanding that no additional costs shall be incurred by _____ as a result of its use. Contractor shall furnish, at no expense to Owner, replacement material acceptable to Engineer if the material used is needed for other construction purposes or is obtained from areas where backfill of the excavation is necessary. Owner will not make payment under the excavation or removal item for the quantity of material obtained if its removal would not otherwise be necessary.
- D. Unforeseen historic items encountered remain the property of Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- E. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to Owner, or otherwise indicated as to remain the property of the Owner, become the property of Contractor; remove from site.

- F. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.03 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.

2.04 NEW MATERIALS

- A. Product materials shall be as specified in the construction drawings. If no specific material is called out, material shall conform to the approved product list in the applicable specification section.
- B. Provide new products and materials unless specifically required or permitted by the Contract Documents.
- C. The use of any one kind or class of material from more than one source is prohibited without permission from the Engineer. Permission, if granted, will set forth the conditions under which the change of source is allowed.
- D. If it is found after trial that sources of supply for previously approved materials do not produce uniformly acceptable products, or that conditions require extraordinary inspection and testing to prevent delivery of unacceptable material, the Contractor shall furnish the material from other sources capable of producing uniformly acceptable material, or shall arrange for plant alterations as may be necessary and satisfactory to the Engineer.
- E. All materials not conforming to the Contract at the time they are used shall be considered unacceptable, and all such materials will be rejected and shall be removed immediately from the site of the Work unless otherwise instructed by the Engineer. No unacceptable material, the defects of which have been corrected, shall be used until approval has been given.

2.05 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Products that do not meet project specifications may be rejected at any time during the project.
- E. Cost associated with replacement product and delay in project schedule due to rejection shall be at sole expense of Contractor.

2.06 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 BASE SPECIFIED/SCHEDULED PRODUCTS AND DESIGN INTENT

- A. Certain specification sections will indicate a base manufacturer and will then list other acceptable manufacturers. Similarly, certain specification sections will list multiple acceptable manufacturers but only one of the manufacturers will be scheduled on a plan sheet. In these scenarios, the Engineer has designed the system with considerations for the base manufacturer or the product scheduled on the plan sheet. It is the responsibility of all bidders, contractors, suppliers to ensure that when bidding using an acceptable manufacturer other than the base manufacturer or the scheduled manufacturer that the design intent is met. Providing a product by an acceptable manufacturer other than the base specified or scheduled manufacturer constitutes a representation that the submitter:
 - 1. Has investigated supplied product and determined that it meets or exceeds the quality level of the base specified/scheduled product.
 - 2. Will provide the same warranty for the supplied product as for the base specified/scheduled product.
 - 3. As a result of differences between the base specified/scheduled product and the other acceptable manufacturers will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
 - 6. Will maintain dimensions, locations, clearances, accesses and other design intent shown on the plan or otherwise provided by the base specified/scheduled product.

3.02 INCONSISTENCIES

- A. If there is an inconsistency in the quality and/or quantity of Work required by the Contract Documents, either the greater quality and/or quantity of Work indicated shall be provided in accordance with the Engineer's interpretation without change in the contract sum.

3.03 SUBSTITUTIONS IN GENERAL

- A. Proposed substitutions are required to be equivalent in all aspects to the specified products including but not limited to appearance, quality, and performance.

3.04 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- D. Provide complete information on required changes to other Work to accommodate each proposed substitution.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Transmit each substitution request with the Substitution Request cover letter attached to this specification section.
 - 2. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 3. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 4. The Engineer will notify Contractor in writing of decision to accept or reject request.
- G. When a request to substitute a product is made, Engineer may approve the substitution and will issue an Addendum to known bidders.

3.05 SUBSTITUTIONS AFTER BID OPENING

- A. Requests for Substitutions received after Bid Opening will not be considered except in such cases where it is necessary to make a substitution due to strikes, lockouts, bankruptcy, discontinuance of a product, and similar circumstances. Such Requests for Substitution of materials after Contract Award shall be made in writing to the Engineer and shall be made

within ten (10) days of the date that the Contractor ascertains they cannot obtain the material or equipment specified.

- B. Requests for Substitution will not be considered when they are indicated or implied on Shop Drawings or Product Data submittals without a separate previously submitted Request for Substitution Form, or when acceptance will require substantial revision of the Contract Documents.
- C. The Engineer with approval by the Owner will be the judge of the acceptability of all Requests for Substitution received after Bid Opening.

3.06 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:

1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. On delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:

1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.07 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Transport materials to be paid for by weight to the Work in vehicles constructed to prevent loss of material after loading and measuring, in order that quantities of materials as loaded

and quantities actually received at place of operations are same.

- F. Load and transport bulk materials with potential for contamination by means of equipment which is clean and in proper condition, and methods to prevent contamination.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.08 STORAGE AND PROTECTION

- A. Obtain Owner's approval of location contemplated for storage of equipment or materials prior to placing such on Owner's properties.
- B. Promptly relocate stored equipment or materials on Owner's properties upon request should any occasion a rise necessitating access to site.
- C. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- D. Store and protect products in accordance with manufacturers' instructions.
- E. Store with seals and labels intact and legible.
- F. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- G. For exterior storage of fabricated products, place on sloped supports above ground.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- J. Prevent contact with material that may cause corrosion, discoloration, or staining.
- K. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- L. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- M. It shall be the Contractor's sole responsibility for protection and safekeeping of equipment and materials on or near the site and no claim shall be made against Owner by reason of any act of an employee or trespasser.

END OF SECTION

**SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS - NOT USED

1.05 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

1. Minimize amount of bare soil exposed at one time.
 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- H. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Dimensions and elevations shown on Contract Documents shall be accurately followed even if they differ from scaled measurements. No work shown on the Drawings, the dimensions of which are not indicated, shall be executed until necessary dimensions have been obtained from the Engineer.
- B. Owner to employ and pay I & S Group, Inc. (ISG) for all survey work.

- C. Unless otherwise specified in the specific sections, Engineer shall provide engineering surveys to establish reference points as follows:
1. Verify locations of survey control points prior to starting work.
 2. Contractor shall give Engineer sufficient notice, normally two working days, to provide staking for the orderly progress of the work and shall provide clear line of sight for all staking.
 3. Promptly notify Engineer of any discrepancies discovered.
 4. Contractor shall locate and protect survey control and reference points. Contractor may be charged with expense of resetting all such stakes and marks destroyed or disturbed due to Contractor's carelessness or negligence. If work has been improperly placed due to control point damage, Contractor shall be responsible for correcting such work at no cost to Owner.
 5. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
 6. Clearing Limits Staking
 7. Site Limits/Erosion Control Fence Staking
 - a. One set of stakes for location of silt fence/project boundary fence and/or tree preservation limits.
 8. Rough Grade Staking
 - a. One set of stakes for location and grade over entire site for grading correction. Stakes to include:
 - 1) Approximate building corners
 - 2) of proposed entrances and roads
 - 3) Main corners of parking areas
 - 4) Pond contours
 9. Agricultural Drain Tile
 - a. One set of stakes for location and grade. Stakes to include (unless approved by Engineer if requested differently from Contractor):
 - 1) Structures and drop intakes with location, offset, and line reference
 - 2) Offsets for lines at 100-ft stationing
 - 3) Connections to proposed tile branches
 - 4) Existing tie in locations (to be field verified)
 10. Culverts

- a. One set of stakes for location and grade. Stakes to include:
 - 1) Pipe and flared end sections with location, offset, and line reference
 - 2) Offsets (if requested by Contractor)
 - 3) Proposed grading elevations
11. Storm Sewer
- a. One set of stakes for location and grade. Stakes to include:
 - 1) Catch basin and manhole structures with location, offset, and line reference
 - 2) Curb style catch basin staked at back of curb and line staked along back of curb to align casting.
 - 3) Offsets for lines at 100-ft stationing
 - 4) Service locations
 - 5) Flared end sections with location, offset, and line reference
 - 6) Existing tie in locations (to be field verified)
12. Final Road Alignment Staking
- a. One set of stakes for location and grade at centerline for final grading correction.
13. Pond Staking
- a. One set of stakes for location and grade. Stakes to include:
 - 1) Top of bank contour
 - 2) Maintained or normal water contour
 - 3) Bottom of pond contour
14. Retaining Wall Staking
- a. One set of stakes for location and grade. Stakes to include:
 - 1) Offset to bottom face of wall to be determined at time of staking
 - 2) 50 foot stations with grades to bottom face of wall at proposed finished grade
 - 3) Grade changes, bends, corners, & ends of wall
 - b. Retaining wall plans and/or specifications to be provided prior to staking.
15. Monument Sign, Sign Poles, Miscellaneous Small Structures
- a. One set of stakes for location and grade to proposed finished grade.

16. Small Utility and/or Easement Staking
 - a. One set of stakes for location only.
17. All other staking shall be the responsibility of the Contractor. The Contractor shall furnish sufficient equipment and personnel for the determination of plan grades, cross sections, course thickness, etc. The survey cost of establishing stakes requested by the Contractor for the convenience of the Contractor, beyond those cited as basic project control, will be charged to the Contractor or withheld from the amounts due to the Contractor.
18. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
19. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.
20. Utilize recognized engineering survey practices.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as shown.
 2. Report discrepancies to Engineer before disturbing existing installation.
 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 1. Remove items indicated on drawings.
 2. Relocate items indicated on drawings.
 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove

existing finish if necessary for successful application of new finish.

4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- D. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- E. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- F. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- G. Do not begin new construction in alterations areas before demolition is complete.
- H. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Collect and remove waste materials, debris, and trash/rubbish from site daily and dispose off-site; do not burn or bury.
- C. Contractor's removal and disposal of waste material, rubbish, and debris, and Site cleanup shall be considered incidental Work for which no direct compensation will be made.

3.09 PROTECTION OF SURFACE STRUCTURES, FEATURES, AND WORK

- A. Protect all public and private surface structures and features located outside the Project area, together with those within the Project area which are indicated in the Drawings as being saved including, but not limited to, streets, roads, highways, curbs, sidewalks, ditches, embankments, culverts, bridges, fences, trees, shrubs, turf, existing structures, existing equipment, or other public or private property insofar as it may be endangered by operations in performance of the Work, and take every reasonable precaution to avoid damage to such property.
- B. Restore any public or private surface structure or feature which is damaged or injured directly or indirectly by or on account of any act, omission, or neglect in the execution of the Work which is not designated for removal but visibly evident or correctly shown on the Drawings. Restore any damaged public or private surface structure or feature to a condition as good as or better than that existing before such damage or injury occurred by repairing, rebuilding, or otherwise effecting restoration thereof, or if this is not feasible make a suitable settlement with the owner of the damaged property, all at no expense to the Owner.

- C. Within the Project area, as required, the removal of surface structures and features shall be subject to acceptable replacement following completion of the necessary Work, with all expense of removal and replacement being borne by the Contractor to the extent that separate compensation is not specifically provided for in the Agreement.
- D. Give reasonable notice to occupants of buildings on property adjacent to the Work to permit occupants to remove vehicles, trailers, and other possessions, as well as salvage or relocate plants, trees, fences, sprinkler systems, or other improvements in the Project area, which are designated for removal or which may be destroyed or damaged by Work operations.
- E. Do not operate any off road, steel tracked, or steel wheeled machinery or equipment directly on existing or new pavement surfaces.
- F. Protect all designated trees and planted areas within the Project area. Exercise care and conduct operations so as to minimize damage to new planted areas. In the event of damage to any trees, either privately or publicly owned, in the absence of construction necessity, the Contractor will be required to hire a qualified firm, whose credentials shall be approved by the Engineer, to make necessary repairs. In the event that the tree is deemed un-repairable, replace the tree with one of similar size and type at no additional cost to the Owner. If the tree damaged is too large for replacement of the same size, pay the owner of the tree for the loss of the tree.
- G. Protect and preserve all in-place structures and utilities not specifically designated for removal by the Contract Documents.
- H. Make satisfactory and acceptable arrangements with the owner of any damaged property concerning its repair or replacement, at no additional expense to Owner.
- I. Protect installed work from damage by construction operations.
- J. Provide special protection where specified in individual specification sections.
- K. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

3.10 RESTRICTIONS ON MOVEMENT OF HEAVY LOADS AND EQUIPMENT

- A. The hauling of materials and the movement of equipment to and from the Project and over completed structures, base courses, and pavements within the Project that are open for use by traffic and are to remain a part of the permanent improvement, shall comply with the regulations governing the operation of vehicles on the highways of Minnesota, as prescribed in the Highway Traffic Regulation Act.
- B. Comply with legal load restrictions, and with any special restrictions imposed by the Contract, in hauling materials and moving equipment over structures, completed subgrades, base courses, and pavements within the Project that are under construction, or have been completed but have not been accepted and opened for use by traffic.
- C. Have a completed Weight Information Card in each vehicle used for hauling bituminous mixture, aggregate, batch concrete, and grading material (including borrow and excess) prior to starting work. This card shall identify the truck or tractor and trailer by Minnesota or

prorated license number and shall contain the tare, maximum allowable legal gross mass, supporting information, and the signature of the owner. The card shall be available to the Engineer upon request. All Contractor-related costs in providing, verifying, and spot checking the cab card information (including weighing trucks on certified commercial scales, both empty and loaded) will be incidental, and no compensation other than for Plan pay items will be made.

- D. Equipment mounted on crawler tracks or steel-tired wheels shall not be operated on or across concrete or bituminous surfaces without specific authorization from the Engineer. Special instructions may be imposed by the Contract with respect to speed, load distribution, surface protection, and other precautions considered necessary.
- E. Should construction operations necessitate the crossing of an existing pavement or completed portions of the pavement structure with equipment or loads that would otherwise be prohibited, approved methods of load distribution or bridging shall be provided by the Contractor at no expense to the Owner.
- F. Neither by issuance of a special permit, nor by adherence to any other restrictions imposed, shall the Contractor be relieved of liability for damages resulting from the operation and movement of construction equipment.

3.11 MAINTENANCE DURING CONSTRUCTION

- A. Maintain the Project and construction work until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B of the General Conditions that the Work is acceptable. When a base or surface course is to be placed upon a subgrade constructed by others under a previous Contract, the Contractor shall maintain that subgrade from the date the Contractor starts hauling materials over it or starts the operations of subgrade preparation on it, whichever is the earlier.
- B. Maintenance during construction shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that all roadways and structures are kept in satisfactory condition at all times. Except for work that is specified to be done at the Owner's expense, the Contractor shall bear all costs of maintaining the work as required during construction and until final acceptance of the work, with no compensation being made in addition to that provided by the Contract prices.
- C. If, at any time, the Contractor fails to comply with these provisions, the Engineer will notify the Contractor of the deficiencies. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of written notice to do so, the Owner may immediately proceed to maintain the work and deduct the entire cost of this maintenance from moneys due or becoming due to the Contractor.

3.12 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean debris from drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities and in accordance with Section 01 7800 CLOSEOUT SUBMITTALS.
 - 1. Provide copies to Engineer and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Engineer when work is considered ready for Engineer's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Engineer's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Engineer.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. In the event the Contractor does not correct the items of Work listed within thirty (30) calendar days after receipt of the punch list, the Owner reserves the right to employ the services of other Contractor's and/or service organizations to conduct the necessary Work and deduct any and all associated costs from the moneys due or becoming due to the Contractor. The entry of such other agents on the project to perform this Work will not relieve the Contractor from any of its warranty, maintenance or start-up obligations.
- H. Notify Engineer when work is considered finally complete and ready for Engineer's Substantial Completion final inspection.
 - 1. After final cleaning up of the work, premises, and all other areas and structures connected with the performance of the Contract, the Work as a whole, shall be inspected by the Engineer and Owner; and any workmanship or materials found not meeting the requirements of the specifications shall be identified and included on a list given to the Contractor.

2. The Contractor shall, at its own expense, promptly remove, replace, or otherwise correct the deficiencies with good satisfactory workmanship and material to the satisfaction of the Owner and Engineer.
 3. The list given to the Contractor will also include an anticipated completion date for the listed deficiencies. If there is justifiable reason that the Contractor cannot correct the noted deficiencies within the allotted time, the Engineer shall be notified in writing.
 4. If the noted deficiencies are not corrected within the allotted time, and no written request is received by the Engineer, the Owner may separately hire outside forces to complete the work. In this event, the cost of the outside forces, plus an additional fifty percent for engineering and administration will be withheld from the amount due the Contractor.
- I. Complete items of work determined by Engineer listed in executed Certificate of Substantial Completion.
 1. The project shall be accepted after the final inspection has been conducted and all settlement, defects, damages, etc. discovered during the final inspection have been remedied.

END OF SECTION

**SECTION 01 7113
MOBILIZATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparatory Work and operations, including the movement of personnel, equipment, supplies, and incidentals to the project to establish Contractor's offices and buildings or other facilities. This Work may also include obtaining bonds, permits, and demobilizing.

1.02 DEFINITIONS - NOT USED

1.03 PRICE AND PAYMENT PROCEDURES

- A. Unit Price Bid

- 1. Partial payments for mobilization shall be in accordance with the following table:

Mobilization Partial Payments		
When	Pay Lesser of these Two Amounts	
Percent of Original Contract Amount Completed*	Percent of Mobilization	Percent of Original Contract Amount
5	50	3
15	75	5
25	100	5
95	100	-

* The percent of Original Contract Amount = the amount earned by the Contractor, excluding money earned for mobilization and material on hand, divided by the total value of the original contract (all contract items). If the contract unit price for mobilization exceeds 5 percent of the total original contract amount, the Owner may withhold (on any partial estimate) the portion in excess of 5 percent until the Contractor earns at least 95 percent of the original contract amount.

- 2. Payment for more than the original contract unit price for mobilization will not be made, even if the Contractor shuts down work on the project or moves equipment away from the project and then back again.
- 3. If the Contract Documents do not contain a lump sum item for mobilization, all costs incurred by the Contractor for mobilization shall be incidental to the project and no claim for compensation or extra work will be accepted..

1.04 REFERENCE STANDARDS

- A. MnDOT Specification No. 2021 shall apply, except as modified herein.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
 - 5. Incineration, either on- or off-site.
- E. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- C. Section 01 7000 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity or reactivity.

- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.

- C. See Section 01 7000 for trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- B. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- C. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- D. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Warranties and bonds.

1.02 SUBMITTALS

- A. Project Record Documents: Submit documents to Engineer with claim for final Application for Payment.
- B. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
- C. Certification of State Income Tax Withholding from Wages Paid to Employees:
 - 1. Documentation from Minnesota Department of Revenue of completed IC-134 Affidavit Form for General Contractor and all Sub-Contractors.
- D. Consent of Surety

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.

6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
 - C. Store record documents separate from documents used for construction.
 - D. Record information concurrent with construction progress.
 - E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
 - F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 4. Field changes of dimension and detail.
 5. Details not on original Contract drawings.
 6. Any data addressed in specific sections of this specification.

3.02 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Final Acceptance is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

**SECTION 31 0010
APPLICATION OF WATER**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide and apply water to control dust created by traveling public and Contractor in performing other necessary work within project boundary as indicated in the Contract Documents, or directed by Engineer.

1.02 DEFINITIONS - (NOT USED)

1.03 PRICE AND PAYMENT PROCEDURES

- A. Application of Water:
 - 1. Measurement will not be made. Cost of providing, transporting, and applying water, if necessary, shall be considered incidental to the Work and no claim for compensation or extra work will be accepted.

1.04 REFERENCE STANDARDS

- A. MnDOT Specification Section 2130 - Application of Water for Dust Control

1.05 SUBMITTALS - (NOT USED)

1.06 DELIVER, STORAGE & HANDLING - (NOT USED)

1.07 QUALITY ASSURANCE - (NOT USED)

1.08 SITE CONDITIONS - (NOT USED)

1.09 TOLERANCES - (NOT USED)

1.10 WARRANTY - (NOT USED)

PART 2 PRODUCTS

2.01 MATERIALS

- A. Water: To be reasonably clean

PART 3 EXECUTION

3.01 APPLICATION OF WATER

- A. Secure own source of water.
- B. Contact Owner to determine whether water is available for use and associated cost.
- C. Water supply and equipment shall be capable of applying quantity of water required to abate dust and avoid unwarranted loss of water through evaporation, absorption, or drainage.

END OF SECTION

**SECTION 31 0011
SITE RESTORATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to restore the site created by the Contractor in performing the Work within project boundary as indicated in the Contract Documents, or directed by Engineer.

1.02 DEFINITIONS

- A. Soil ripping = Tilling = Chisel Plowing = Ripping
- B. Construction Site = Any area that has been disturbed by the Work, including but not limited to;
 - 1. Staging Areas
 - 2. Haul/Access Roads
 - 3. Agricultural Tile Installation
 - 4. Open Ditch Cleaning, Deepening, Widening and Slough Repairs
 - 5. Open Ditch Buffer Strips
 - 6. Topsoil Strip for Fill and/or Cut Material

1.03 PRICE AND PAYMENT PROCEDURES

- A. Measurement will not be made for site restoration: Cost of soil ripping shall be considered incidental to the Work and no claim for compensation or extra work will be accepted.

1.04 REFERENCE SPECIFICATIONS - NOT USED

1.05 SUBMITTALS

- A. If Landowner agrees to restore their own land then Contractor shall submit Landowner agreement form signed by both Contractor and Landowner to the Engineer.

1.06 DELIVER, STORAGE & HANDLING - NOT USED

1.07 QUALITY ASSURANCE - NOT USED

1.08 SITE CONDITIONS

- A. Contractor shall provide for protection, temporary removal and replacement, or relocation of any obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.

1.09 TOLERANCE - (NOT USED)

1.10 WARRANTY - NOT USED

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL

- A. Any disturbed area of the construction site shall be restored to pre-construction state.
- B. All rocks which are 3 inches in diameter or larger as well as broken tile pieces shall be removed and disposed of or buried with a minimum of 36 inches of earthen cover. Contractor may use manual labor or mechanical equipment to pick up rocks.
 - 1. All rocks not buried shall be removed for site at contractors expense.
 - 2. Any construction debris shall be removed and disposed of or buried with a minimum of 36 inches of earthen cover.

3.02 RESTORATION OF TILLABLE LAND

- A. Contractor shall ensure that a minimum of 12 inches of topsoil or matching surrounding topsoil thickness, whichever is greater.
- B. Contractor shall use common farming technique to chisel plow all disturbed tillable areas.
- C. Rock picking and disposal shall be done in all areas of leveled spoil material prior to and post chisel plowing. Refer to 3.01.B above for rock picking.
- D. Contractor will be required to chisel plow all leveled areas with a chisel plow having staggered shanks; maximum plowed width per pass to be 12 inches. A minimum of two passes shall be made over the disturbed areas with the second pass being offset from the first. Chisel plow to a minimum depth of 15 inches.
 - 1. If landowner/renter has incorporated a no-till or strip till practice, teh Contractor shall chisel plow according to Part 3.02.D of this section and then level to conform to standard no-till/strip-till practice.
 - 2. Unless otherwise specified in the landowner/contractor agreement form, and provided to the Engineer.
 - 3. Individual landowners may not want the Contractor to restore his/her own land. IF this is the case, the Contractor shall provide written documentation signed by both parties involved. (See Specification 31 0011-1 for agreement form).

3.03 RESTORATION OF NON-TILLABLE LAND

- A. Contractor shall ensure that a minimum of 6 inches of topsoil or matching surrounding topsoil thickness, whichever is greater.

- B. The seedbed shall be prepared with a spring tooth field tiller, disk or similar equipment to a minimum depth of three (3) inches. If the area to be seeded has dried unusually hard, a heavy soil conditioner shall be used to loosen the surface
- C. Rock picking and disposal shall be done in all areas of leveled spoil material prior to and post chisel plowing. Refer to 3.01.B above for rock picking.
- D. Seeding shall conform to Section 32 9219 – SEEDING.
- E. Individual landowners may not want the Contractor to resetore his/her own land. IF this is the case, the Contractor shall provide written documentation signed by both parties involved. (See Specification 31 0011-1 for agreement form).

END OF SECTION

SECTION 31 0011-1
DISTURBANCE OF TILLABLE LAND – AGREEMENT FORM

I (Landowner Name) _____ give the right for (Contractor Name)
_____ to not till (Chisel Plow/Rip) any of the disturbed areas on my land along
(Branch Name) _____ which is located on the (Project Name)
_____ project in Section _____ of (Township
Name) _____ Township.

Contractor's Name (Print Name)

Landowner's Name (Print Name)

Contractor's Signature

Landowner's Signature

**SECTION 31 0100
MAJOR UTILITY CROSSING**

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, material, tools, and equipment necessary or incidental to cross utilities as indicated in Contract Documents.

1.02 DEFINITIONS

- A. Major Utility = Natural Gas Line greater than 6-inches, Electrical Transmission Line, Water line. Does not include fiber, telephone or other utilities.
- B. MnDOT = Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]

1.03 PRICE AND PAYMENT PROCEDURES

- A. Payment shall be made on measured installed quantities, by the Engineer, constructed for the work.
- B. Payment will be made at the unit prices bid for the work, shall constitute full and complete payment for the entire project including materials, labor, and all incidental items necessary for the complete and successful prosecution of the work in accordance with the intent of the drawings and specifications. Refer to Section 01 2200 – UNIT PRICES, for additional unit price requirements.
- C. Where authorized in writing by the Engineer and approved by the Owner, payment for work not included in the Bid Security Form or the Plans and Specifications, and for which no unit price has been established, will be made as provided under the General Conditions.
- D. Major Utility Crossing
 - 1. Major Utility Crossing shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental), but are not limited to:
 - a. Location marker
 - b. Additional work for coordination efforts
 - c. Additional work for Excavation around utility
 - d. Additional work for backfilling around utility
 - e. Any additional material for around utility

1.04 REFERENCE SPECIFICATIONS

- A. Section 31 0011 – SITE RESTORATION
- B. MnDOT Section 1507 – Utility Property and Service

C. MnDOT Standard Plates

1.05 SUBMITTALS – NOT USED

1.06 DELIVERY, STORAGE & HANDLING – NOT USED

1.07 QUALITY ASSURANCE

- A. The materials used in this work shall be new and conform to the specifications for class, kind and size of material specified below, or as specified hereinafter.
- B. Materials at delivery point shall be inspected by the Contractor for loss or damage in transit. It shall be Contractor's responsibility to repair or replace damaged items in accordance with the manufacturer's instructions.
- C. The Engineer may reject any damage product before installation.

1.08 SITE CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data but locations may vary and cannot be guaranteed. The exact location shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing utilities.
- B. Additional underground utilities may exist that are not shown on the plans and shall be treated as if they are shown on the plans unless specified by the Engineer.
- C. Contractor shall provide for protection, temporary removal and replacement, or relocation of said obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.

1.09 TOLERANCES – NOT USED

1.10 WARRANTY – NOT USED

PART 2: PRODUCTS – NOT USED

PART 3: EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall examine the project site, make determinations concerning soil and groundwater conditions, and review requirements of the plans and specifications related to construction of the work. Contractor shall provide the equipment and related appliances necessary to perform the work in accordance with the plan for crossing the utility.
- B. Prior to crossing any public road, the Contractor shall notify the appropriate road authority at least 15 days in advance and shall be responsible for the utility locate.

3.02 MAJOR UTILITY CROSSING

- A. Contractor shall cross the utility with the least amount of impact to the utility as possible. If any impact is planned, Contractor shall notify the Engineer as well as the Utility Company

prior to starting the crossing.

- B. Contractor shall adhere to utility company specifications, if no specifications are obtained then Contractor shall follow the detail in the construction documents.

3.03 COORDINATION WITH UTILITY COMPANY

- A. Utility Company may have additional requirements and shall be consulted by the Contractor.

3.04 RIPPING DISTURBED AREAS

- A. Refer to Specification 31 0011 – SITE RESTORATION

END OF SECTION

**SECTION 31 2316
EXCAVATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental to excavate, backfill, fill, grade, and compact the site as indicated in the Contract Documents.

1.02 DEFINITIONS

- A. Structures: Existing and new construction including slabs, buildings, pump stations, manholes, retaining walls, and structural elements and systems.
- B. Soil Testing Laboratory: Refers to a professional geotechnical engineering firm with soil sampling and testing services that is independent from, but hired by Contractor. Soil testing laboratory's engineer shall be licensed in the State of Minnesota.
- C. Topsoil: Organic soil material, typically found at the top of soil horizon.
- D. Topsoil Strip and Place Spoils: Stripping of topsoil layer and placing spoils from excavated area then placing topsoil back on top of excavated material.
- E. MnDOT: Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]

1.03 PRICE AND PAYMENT PROCEDURES

- A. Excavation, Backfill, and Compaction: Work outlined in the Contract Documents shall be measured and paid for only to the extent where individual pay items are included in the Proposal, and is otherwise considered incidental to the Work and no claim for compensation or extra work will be accepted.
- B. The Engineer may hold 20% of the total quantity until final topographic survey has been completed and evaluated to obtain final quantities.
- C. Common Excavation:
 - 1. Common Excavation shall be paid for by the planned (P) cubic yard of compacted volume (EV) and shall include (as incidental) but not be limited to;
 - a. Stripping of topsoil
 - b. Hauling, placement and compaction fo material
 - c. Topsoil leveling
 - d. Site restoration after topsoil leveling
 - e. Temporary seeding
 - f. Removal or picking of rocks

2. Common Excavation shall be based on total volume required to perform the Work as broken down on the earthwork table provide in the Contract Documents.

D. Common Borrow

1. Common Borrow shall be paid for by the cubic yard (CY) of planned (P) compacted volume (CV) and shall include (as incidental) but not be limited to;
 - a. Stripping of topsoil
 - b. Hauling, placement and compaction fo material
 - c. Topsoil leveling
 - d. Site restoration after topsoil leveling
 - e. Temporary seeding
 - f. Removal or picking of rocks
2. Common Borrow shall be based on total volume required to perform the Work as broken down on the earthwork table provide in the Contract Documents.

E. Topsoil Strip and Place Spoils

1. Topsoil Strip and Place Spoils shall be paid for by the cubic yard (CY) of planned (P) excavated volume (EV) as measured by the Engineer and shall include (as incidental) but not be limited to:
 - a. Stripping of topsoil
 - b. Hauling, placement and compaction of spoil material
 - c. Topsoil leveling
 - d. Site Restoration after topsoil leveling
 - e. Temporary seeding
 - f. Removal or picking of rocks

F. Redressing of Topsoil

1. Measurement shall not be made as redressing of topsoil is incidental to the above practices, if applicable.

1.04 REFERENCE STANDARDS

- A. Section 31 0011 – Site Restoration
- B. MnDOT Specification Section 2105 - Excavation and Embankment
- C. MnDOT Specification Section 2574 - Soil Preparation

D. MnDOT Specification Section 3149 - Granular Material

1.05 SUBMITTALS

- A. See Section 01 3000 for submittal procedures.
- B. Manufacturer's Certification: Certificate of compliance for all materials, supplies, and equipment provided.
- C. Product Data: Information on manufactured products indicating compliance with requirements of this Section.
- D. Stockpile Location: A sketch of location of stockpile, if different than what is specified on the construction drawings.
- E. Lab Test Reports: As specified; include source of each material tested and date sampled.
 - 1. Gradation Test Report
 - 2. Percent Crushing Test Report
 - 3. Aggregate Quality Test Report
 - 4. Perform tests no more than 90 calendar days before Notice of Award.
- F. Field Test Reports:
 - 1. Soil Density Test Reports
 - 2. Visual inspection of load-bearing excavated surfaces documentation

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stockpile delivered and excavated material at location approved by Owner until required for backfill or fill. Place, grade, and shape stockpile for drainage.
- B. Store materials in manner that will not impose additional loading and soil pressure on excavation limits or structures. Any materials stored outside of the allotted easement must be approved by the Engineer or Private Landowner.

1.07 SITE CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data but locations may vary and cannot be guaranteed. The exact location shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing work.
- B. Contractor shall provide for protection, temporary removal and replacement, or relocation of said obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.
- C. Contractor shall be in accordance with the Minnesota Stormwater Manual - Winter Construction Practices if the Work occurs past October 15th, unless approved by the

Engineer.

1. Minnesota Stormwater Manual – Winter Construction Practice website:
https://stormwater.pca.state.mn.us/index.php?title=Winter_construction_practices_for_site_stabilization,_erosion_prevention_and_sediment_control

1.08 TOLERANCE

A. Contractor shall perform the Work within the following tolerances unless approved by the Engineer.

1. Final Grading Elevation = 0.10 Feet

PART 2 PRODUCTS

2.01 MATERIALS

A. Excavated materials will be classified for reuse as being either Suitable or Unsuitable for backfill or other specified use, subject to selective controls.

1. Suitable Materials: Material that will provide for indicated soil bearing capacity, soil densities, material requirements and that, in the opinion of soil testing laboratory, will not be subject to future decomposition, settlement, subsidence, expansion, and are otherwise of the required soil type.
2. Unsuitable Material: Material that will not provide for indicated soil bearing capacity and soil densities and that, in the opinion of the soil testing laboratory will be subject to future decomposition, settlement, subsidence, expansion, and are otherwise not of the required soil type, as well as material that exceeds 1 cubic yard in volume, cannot be re-used within the project limits, and in the opinion of Engineer requires special means for handling and disposal including but are not limited to organic soils, rubble, wood debris, boulder stone, masonry, concrete fragments, and metals.
3. Excavated material will be classified for payment only when specifically provided in the Contract Documents according to the following classifications:
 - a. Common Excavation: Material not classified as rock excavation, but excluding stripped topsoil material.
 - b. Rock Excavation: Material that requires drilling, or ripping before excavation. This includes boulders and other detached rock larger than 1 cu. yd.
4. All suitable materials shall be reserved for backfill and grading work to extent needed, and any surplus remaining shall be utilized for other construction on the project as may be specified or ordered by Engineer.

B. Utility Excavation:

1. Granular material furnished for foundation, bedding, encasement, backfill, or other utility construction purposes as may be specified shall consist of any natural or synthetic mineral aggregate such as sand, gravel, crushed rock, crushed stone, or slag that shall be so graded as to meet gradation requirements specified herein for

each particular use by material manufacturer or as indicated in the Contract Documents.

2. Foundation:

- a. Material placed 6 inches or greater below bottom of pipe grade as recommended by Engineer or soils testing laboratory as replacement for unsuitable or unstable soils, to achieve improved foundation support.
- b. Shall meet gradation as specified in 33 4510.

3. Bedding:

- a. Material placed below pipe, prior to pipe installation, to facilitate proper shaping and to achieve uniform pipe support.
 - 1) For flexible pipe installation, placed below pipe springline to a point six inches below bottom of pipe or twenty five percent of diameter below pipe, whichever is greater. Bedding must be mechanically compacted below springline.
- b. Shall meet gradation as specified in 33 4510.

4. Encasement:

- a. Material placed from an elevation six inches above top of pipe to pipe bedding, after pipe installation, for protection of pipe and to assure proper filling of voids or thorough consolidation of backfill. Encasement must be mechanically compacted above springline.
- b. Shall meet gradation as specified in 33 4510.

5. Backfill:

- a. Material placed below pavement base course, or below topsoil in areas to receive turf, to an elevation six inches above top of pipe at top of encasement material, as the second stage of backfill, to minimize trench settlement and provide support for surface improvements.
- b. Shall consist of suitable existing trench materials, except as otherwise specified in the Special Provisions. Suitable material shall include mineral soil free of foreign materials (rubbish, organics, and debris), frozen clumps, oversize stone, rock, concrete or bituminous chunks, and other unsuitable material that may damage pipe, prevent thorough compaction, or increase risk of settlement.
- c. The use of Sheep Foot or similar compaction method shall not take place within four feet from top of pipe to 4 feet from top of grade as to not damage pipe or limit infiltration.

C. Site Grading:

- 1. Common Borrow: MnDOT 2105.1A.6 - Select Grading Material
- 2. Granular Borrow: MnDOT 2105.1A.7 - Granular Material

3. Select Granular Borrow: MnDOT 3149.2B.2 - Select Granular Material
4. Stabilizing Aggregate: MnDOT 3601 - Class II Riprap
5. Topsoil Borrow: Fertile soil, capable of sustaining vigorous plant growth; free of subsoil, clay, rocks or impurities, plants, weeds and roots; meeting the requirements of MnDOT 3877.
 - a. Common Topsoil Borrow:
 - 1) Per MnDOT 3877.2A
 - 2) For general use as a turf growing medium.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Determine to satisfaction of location and nature of surface and subsurface obstacles and the soil and water conditions that will be encountered during the Work.
- B. Test borings and other exploratory operations may be made by Contractor at Contractor's expense. Make arrangements for soil investigation with Owner.
- C. Make no claim for additional payments because of nature of the subsurface in which work of this Section is performed.
- D. Make no claim for additional payments for repairs made to subgrade due to weather-related issues.

3.02 PREPARATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum.
- C. Stake and flag locations of known utilities.
- D. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- E. Notify utility company to remove and relocate utilities if necessary.
- F. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when allowed by utility owner and then only after acceptable temporary utility services have been provided.
 1. Provide temporary services, complying with Federal, State, and local laws and regulations, and as acceptable to Owner, during any interruptions.
- G. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from lateral movement, settlement, undermining, washout, and other undesirable conditions created by the Work.

- H. Maintain full access to project exits and entrances, fire hydrants, street crossings, sidewalks, and other points as designated by Owner to prevent significant interruption of accessibility.
- I. Maintain existing site drainage ways or provide new paths of drainage as required to perform earthwork.
- J. Protect trees to remain by providing substantial fencing around entire tree at outer tips of its branches; no grading is to be performed inside this line.
- K. Protect plants, lawns, and other features to remain as a portion of final landscaping.

3.03 SOIL REMOVAL AND SALVAGE FOR EXCAVATION AND GRADING

- A. Topsoil shall be re-used on site as specified on Plans; excess shall be placed on adjacent fields as approved by the Engineer.
- B. Stockpile subsoil to be re-used on site as specified on Plans.
- C. Remove unsuitable material from site and dispose of properly.
- D. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.04 EXCAVATION

- A. Segregate suitable material, granular material, and topsoil from other materials and stockpile to extent practicable during excavation operations so as to permit best use of available materials at time of backfilling.
- B. Unless otherwise specified in the Contract Documents, material handling as described above shall be considered incidental with no additional compensation provided.
- C. Slope sides of excavations as required to provide stability and to comply with Federal, State, and local laws and regulations. Shore and brace excavation when required by project conditions.
- D. Utilize cofferdams, steel sheet piling, shoring, underpinning, and other systems required to prevent damage to existing structures, settlement, slope stability problems, and undermining.
- E. Remove construction related protection systems after their need is complete, in manner that will not loosen or damage soils, create slope stability problems, and otherwise damage existing or new structures.
- F. Leave construction related protection systems in place subject to approval of Engineer, when removal would create potential for damage to soil conditions or structures.
- G. Excavate to required elevations and dimensions within a tolerance of plus or minus 0.10-ft. and extending a sufficient distance as required to provide for the Work, completion of the structures, observation, and testing.
- H. When excavating for utility and structure foundations, do not disturb soil materials at and below excavation limits. Excavate by hand when necessary to prevent damage to soil

materials that will remain.

- I. Trim utility and structure bottoms to required lines and grades to leave solid dense base of required bearing capacity.
- J. Use of explosives for rock excavation is not permitted.
- K. Rock excavation for utility construction shall be to a depth of 6-inches below required invert elevation of pipe to allow for placement of specified bedding materials. All rock excavated shall be removed from site.
- L. Excavation of unsuitable material encountered when establishing grade elevations shall be to depth recommended by Engineer or soils testing laboratory beneath utilities and structures to obtain design bearing capacity. Excavated material to be considered Common Excavation.
- M. Removal of materials beyond required subgrade elevations or dimensions without specific approval of Engineer or soils testing laboratory as well as backfilling, compaction, and remedial work recommended at over excavated area shall be at Contractor's expense.
- N. Fill unauthorized excavation under structures and their components utilizing one of the following systems, and as acceptable to Engineer.
 - 1. Extend indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation.
 - 2. Install lean concrete fill to bring elevations to required position.
 - 3. Fill and compact unauthorized excavations with soil materials and to density required by Engineer.
- O. Elsewhere, backfill and compact unauthorized excavations as indicated for authorized excavations of the same classification.
- P. Dewater excavations for observation of excavation limits by soils testing laboratory.
- Q. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- R. Protect excavation bottoms from freezing. Remove frozen materials and provide unfrozen compacted materials acceptable to Engineer prior to placement of materials on them.

3.05 FILLING, BACKFILLING, AND COMPACTING

- A. Preference shall be given to landowners to haul borrow and topsoil offsite. Contractor would be responsible for coordinating with landowner and stockpiling on-site. It is the responsibility of the landowner to haul materials off site. The contractor would only be paid for completed quantities for top soil strip and place soils
- B. Remove all topsoil and organic material to satisfaction of Engineer prior to placing fill or embankment under structures and paved areas.
- C. Do not place fill required below structures until soil conditions encountered have been approved by Engineer.

- D. Do not place material on muddy surfaces, frozen ground, or on materials containing frost or ice.
- E. Do not place material on or in water.
- F. Do not proceed with backfilling of excavations until completion of the following:
 - 1. Acceptance by Engineer for construction of structures below finish grade.
 - 2. Observation, testing, approval, and recording of locations of underground utilities.
 - 3. Removal of concrete formwork.
 - 4. Removal of shoring, bracing, other protection systems, backfilling, and compaction of voids left by their removals.
 - 5. Removal of unsuitable materials, construction related debris, and excess materials.
- G. When existing in-place soil materials are of density less than that specified, but the soil material is acceptable to Engineer, perform removal, filling, disking of ground surface, moisture-conditioning to the optimum moisture content, and compact to provide specified density and bearing capacity as recommended by soils testing laboratory and acceptable to Engineer.
- H. Placement and Compaction of backfill:
 - 1. Place materials in compacted layers of thickness required to obtain specified soil densities.
 - 2. Layers shall not exceed 8-inches in loose depth for material compacted by heavy compaction equipment and not more than 4-inches in loose depth for material compacted by hand operated tampers unless soil density tests substantiate specified densities will be obtained when material is placed in thicker lifts.
 - 3. Place material in lifts uniformly to the same approximate elevation, not exceeding final grade height, in manner required to prevent creation of unbalanced soil lateral pressures, wedging action of materials and soil pressures that exceed the design lateral soil conditions and to prevent damage to the structure.
 - 4. Moisture or aerate each layer to the extent required to obtain optimum moisture content required for indicated compaction density.
- I. Prevent free water from appearing on surface during or subsequent to compaction operations.
- J. Remove and replace with acceptable material, or scarify and air dry otherwise acceptable soil materials that is too wet to obtain specified soil density.
- K. Assist drying by disking, harrowing, or pulverizing, until moisture content is reduced to value required for compaction.
- L. Compact each layer to required density specified for each area classification.

- M. Hand tamp or utilize hand operated vibratory equipment when required to compact material placed immediately adjacent to structures.
- N. Do not place additional fill layers until density of each layer in place complies with compaction requirements.
- O. Existing Topsoil shall not be covered with clay or other fill material unless approved by the Engineer.
 - 1. Topsoil shall be placed in an uniform matter as specified by the construction drawings unless approved by the Engineer.

3.06 GRADING

- A. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas to approximate contour of the finished surface. Smooth finished surface within specified tolerances with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Tolerance Top Surface of General Grading: Plus or minus 0.1 feet from plan elevations.
- C. Tolerance Top Surface of Grading Under Building Slabs and Under Paved Areas: Plus or minus 0.05 feet from plan elevations.
- D. Rough grade areas adjacent to structures to drain away from structures and to prevent ponding or increase in soil lateral pressure on the structure.
- E. The subgrade shall be loosened with a disc or harrow to a depth of six inches prior to application of topsoil.
- F. All construction debris shall be removed prior to topsoil placement.
- G. Topsoil shall be imported as necessary to restore areas to pre-construction status or because of improper soil mixing at no additional cost to the Owner.

3.07 TOPSOIL PREPARATION

- A. Refer to Specification 31 0011 - SITE RESTORATION

3.08 FILL AT SPECIFIC LOCATIONS

- A. Use select granular borrow unless otherwise specified or indicated.
- B. Buried Utility Piping Fill in Trenches:
 - 1. Bedding: Use Fill Type Bedding.
 - 2. Encasement: Use Fill Type Encasement.
 - 3. Cover with Fill Type Backfill.
 - 4. Fill to subgrade elevation.

5. Compact to minimum 95 percent of the standard maximum dry unit weight per ASTM D698 (standard Proctor test).
- C. Site Grading Fill and Embankment:
1. Use Fill Type Common Borrow as is available on site, otherwise use Fill Type Select Granular Borrow.
 2. Fill to subgrade elevation.
 3. Under structures compact to minimum 100 percent of standard maximum dry unit weight per ASTM D698 (standard Proctor test).
 4. In upper 3-feet under pavement subgrade compact to minimum 100 percent of standard maximum dry unit weight per ASTM D698 (standard Proctor test).
 5. In areas not indicated above compact to minimum 95 percent of standard maximum dry unit weight per ASTM D698 (standard Proctor test).
- D. Turf Establishment Areas:
1. Use Fill Type Topsoil.
 2. Fill up to finished elevation.

3.09 TOPSOIL STRIP AND PLACE SPOILS

- A. Contractor shall ensure proper drainage to adjacent fields during the placement of spoils and stripping of topsoil.
- B. Topsoil shall be stripped to a depth, as specified on the construction drawings, and placed adjacent to fill area.
- C. Place excess spoil area from grading as specified on the construction drawings but not be limited to elevation and area.
 1. Spoils may be placed in a different locations, as approved by the Engineer and the property owner.
- D. If topsoil stripping is located within grass area, Contractor shall separate the vegetation material and place before topsoil is placed back on spoil area. Contractor shall properly restore the area to its pre-construction state.
- E. Remove unsuitable material, as identified by the Engineer, from site and dispose of properly.

3.10 FIELD QUALITY CONTROL

- A. Perform general grading and nonstructural embankment Work in accordance with MnDOT Specification Section 2105 - Quality Compaction Method.
- B. Preference shall be given to landowners to haul borrow and topsoil offsite. Contractor would be responsible for coordinating with landowner and stockpiling on-site. It is the responsibility of the landowner to haul materials off site. The contractor would only be paid for completed

quantities for top soil strip and place soils.

- C. Arrange for visual inspection of load-bearing excavated surfaces by soil testing laboratory before placement of foundations.
- D. Soil testing laboratory shall perform indicated Field Quality Control tests in structure and pavement areas per ASTM D698 (standard Proctor test), and submit test reports to Engineer and Contractor per Section 01 4000 and the following.
 - 1. Inspect and approve excavation limits, subgrades, and filled and compacted layers before further Work is performed thereon.
 - 2. Report verbal test results to Engineer and Contractor on same day soil density tests are made.
 - 3. Report written test results to Engineer and Contractor within 24-hrs from when soil density tests are made.
 - 4. Include in reports of soil density tests project identification name and number, date of test, name of Contractor, name of testing laboratory, location of test including elevation, soil type, and density obtained.
 - 5. Perform soil density tests to verify compliance with indicated requirements at not less than the following frequencies for the indicated area unless field conditions substantiate that frequency can be modified and modification is approved by Engineer.
 - 6. Existing Surfaces and Fill Layers: Perform a minimum of One approved density test per 4-feet of fill for every 3,000 square feet of area.
- E. Soil testing laboratory shall perform additional tests when test results indicate required density has not been obtained. Perform corrective work as required to obtain required density.
 - 1. Cost associated with corrective work and required retesting at failed test locations shall be at Contractor's expense.
- F. Do not place additional layers until required density in each layer has been obtained. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.11 PROTECTION AND CLEANING

- A. Barricade open excavations occurring as part of this work and post warning lights. Operate warning lights during hours of dusk to dawn each day and as otherwise required
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- D. Protect areas that have been finish graded from subsequent construction operations, traffic, and erosion.

- E. Protect infiltration areas and rain gardens from compaction, subsequent construction operations, traffic, and erosion.
- F. Repair disturbed areas and compact to required density prior to further work.
- G. Dispose of waste and excess soil material offsite and under conditions that are in accordance with Federal, State, and local laws and regulations at no additional cost to Owner.
- H. Contractor shall stay within the allotted easement as specified on the Construction Plans unless approved by the Engineer. Contractor must follow proposed alignments for all deliveries and construction activities.
- I. Unauthorized disturbance outside of easement may be subject to additional damages paid by contractor, unless approved by the Engineer.

3.12 RIPPING DISTURBED AREAS

- A. Refer to Specification 31 0011 – SITE RESTORATION

END OF SECTION

**SECTION 31 2319
DEWATERING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental to dewatering systems as necessary and indicated in the Contract Documents.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Dewatering:
 - 1. Measurement will not be made. Cost for dewatering, if necessary, shall be considered incidental to the Work and no claim for compensation or extra work will be accepted.

1.03 REFERENCE STANDARDS

- A. MnDOT Specification Section 2573 - Storm Water Management

1.04 QUALITY ASSURANCE

- A. Conduct excavation work in accordance with requirements of applicable governing authority having jurisdiction and Section 31 2316 - Excavation.
- B. Secure all required permits for dewatering operations and additional hazard insurance as required. Cost of obtaining such permits and insurance shall be at Contractor's own expense. Contractor is responsible for acquiring NPDES permit for dewatering practices.

PART 2 PRODUCTS

2.01 MATERIALS - (NOT USED)

PART 3 EXECUTION

3.01 SCOPE

- A. Design Requirements:
 - 1. Design dewatering system subject to requirements of this Section.
- B. Performance Requirements:
 - 1. Dewatering systems shall provide for the following:
 - a. Prevent flotation, uplift pressures, increased water pressures, and hydrostatic soil pressures, heaving, settlements, shifting, and related damage of existing or new structures, utilities, site items, and property.
 - b. Maintain excavations free of water to the extent required for the Work and observations of these areas by the Engineer and soil testing laboratory.

- c. Prevent loss of soil material, boils, movement of fines, slope stability problems, undermining, and other disturbances to the existing soils and rock formations.
- d. Prevent surface water and dewatering discharge related damages.
- e. Coordinate with surface water control systems.
- f. Conform to applicable government regulations and accepted engineering and construction practice.

3.02 EXAMINATION

- A. Examine Project site and conditions under which dewatering work is to be performed.

3.03 PREPARATION

- A. Locate existing underground utilities in area of work. When utilities are to remain in place, provide adequate means of protection during dewatering operations.
- B. Prevent interruption of existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.
- C. Consult Engineer immediately for direction as to procedure if uncharted or incorrectly charted piping or other utilities are encountered during dewatering operations. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities equal to the condition existing prior to the damage and as approved by utility owner.
- D. Maintain full access to structure exits and entrances, fire hydrants, street crossings, sidewalks, and other points designated by Owner to prevent unacceptable interruption of accessibility.

3.04 PROTECTION

- A. Protect against damages caused by dewatering operations and damages caused by inadequate dewatering or water removal.
- B. Damages to new and existing work within the Project or on adjacent property caused by dewatering operations, flooding, groundwater, subsurface water, surface water and other damage caused by dewatering operations or failure to protect against damages shall be repaired at no additional cost to Owner.

3.05 APPLICATION

- A. Conduct dewatering operations so as to prevent groundwater, subsurface water, flooding, and surface water from flowing into excavations, backfill zones, and surrounding areas until excavation, backfilling, and compaction work is complete and until finished work and adjacent structures are safe from damage.
- B. Conduct dewatering operations continuously, without interruption, and take measures necessary including, but not limited to, providing standby equipment and constant monitoring

to assure system remains operational and effective throughout dewatering period.

- C. Continue dewatering operations until each structure on project site is safe from damage, buoyancy, uplift, and increased hydraulic pressures or soil hydrostatic pressures which may develop as a result of the dewatering operations or when dewatering operations are reduced, interrupted, or stopped and until the following:
 - 1. Structures, structural elements, soils, equipment, and other systems that will be resisting buoyancy, uplift, soil hydrostatic pressures, and water pressures are complete, in place, and structural materials have achieved their specified design and 28-day compressive strengths.
- D. Shut off dewatering system at such rate to prevent quick upsurge of water, which may weaken underlying sub grade or surrounding soil.
- E. Maintain drainage where drainage ways are obstructed by dewatering operations.
- F. Prevent water accumulation in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades, foundations, and adjacent existing structures.
 - 1. Maintain pumps, well points, sumps, suction and discharge lines, temporary drainage ditches outside excavation limits, sheeting, and other dewatering systems and diversions necessary to convey water away from excavations, utilities, and adjacent structures.
- G. Do not use trench excavations as temporary drainage ditches.
- H. Provide detention, water quality, and discharge facilities for water from excavations and dewatering operations as required by Federal, State, and local laws and regulations before discharging.

END OF SECTION

**SECTION 31 2500
EROSION AND SEDIMENT CONTROL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental as indicated in Contract Documents to:
 - 1. Prevent, control, minimize, or abate pollution of air, land and water.
 - 2. Prevent erosion.
 - 3. Prevent sedimentation of waterways, open drainage ways, and sewers.
 - 4. Manage storm water runoff and Project related discharges to prevent sediment pollution.
 - 5. Restore areas eroded due to insufficient BMPs.
 - 6. Implement SWPPP in compliance with Contract Documents and MPCA General Permit.
 - 7. Compensate Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

- B. Any specification reference herein, shall be from the latest revision of the published standard.

1.02 DEFINITIONS

- A. AES: Areas of Environmental Sensitivity.
- B. BMPs: Best Management Practices for temporary storm water management & erosion and sediment control.
- C. MPCA: Minnesota Pollution Control Agency.
- D. MPCA General Permit: MPCA Permit No: R100001; General Permit Authorization to Discharge Stormwater Associated with Construction Activity Under the National Pollutant Discharge Elimination System / State Disposal System Program, Issued August 2018.
- E. NOT: Notice of Termination to MPCA General Permit.
- F. NPDES: National Pollutant Discharge Elimination System
- G. Operator: Shall be Contractor (for MPCA permit process).
- H. SWPPP: Storm Water Pollution Prevention Plan.
- I. Rock Check Dam MnDOT Filter Barm, Type 5 (Rock)

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Contractor shall submit any Storm Water Pollution Prevention Plan Reports that have occurred during construction of the Work to the Engineer prior to payment for any Erosion Control measures requested on the pay application.
- C. Partial payments amounts shall be made for satisfactory completion of all work referenced herein, and will be in accordance with Table 2500-1.

**Table 2500-1
Payment Schedule**

Phase of Completion	% of Payment
Initial Installation	50%
Maintenance during first half of Contract Period	25%
Maintenance during last half of Contract Period and removal of BMP	25%

- D. Provide Work under unit price method per Proposal and the following:
 - 1. Temporary Rock Construction Exit
 - a. Temporary Rock Construction Exit shall be paid by the each occurrence and shall include (as incidental) but not be limited to;
 - 1) Placement, maintenance and removal of the rock
 - 2) Any geotextile fabric
 - 2. Silt Fence
 - a. Silt Fence shall be paid by the linear foot and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of silt fence
 - 3. Bale Barriers
 - a. Bale Barriers shall be paid by the linear foot and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of Bale Barriers
 - 4. Sediment Control Logs

- a. Sediment Control Logs shall be paid by the linear foot and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of Sediment control logs
- 5. Filter Berms
 - a. Filter Berms shall be paid by the linear foot and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of filter berms
- 6. Flotation Silt Curtain
 - a. Flotation Silt Curtain shall be paid by the linear foot and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of floating silt curtain
- 7. Rock Check Dam
 - a. Rock Check Dam shall be paid by the each occurrence and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of rock
 - 2) Any geotextile fabric
- 8. Inlet Protection
 - a. Inlet protection shall be paid by the each occurrence as measured by the Engineer and shall include (as incidental) but not be limited to;
 - 1) Placement, Maintenance and removal of inlet protection
 - 2) Sediment control log or silt fence material

1.04 REFERENCE STANDARDS

- A. MnDOT Specification Section 1717 - Air, Land, and Water Pollution
- B. MnDOT Specification Section 2573 - Stormwater Management
- C. MPCA General Storm Water Permit
- D. Protecting Water Quality in Urban Areas - Best Management Practices for Dealing with Storm Water Runoff from Urban, Suburban and Developing areas of Minnesota; MPCA.
- E. Minnesota Stormwater Manual (website),
https://stormwater.pca.state.mn.us/index.php?title=Main_Page

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Product Data: Provide manufacturer's data on BMPs and accessories.
- D. Certifications
 - 1. Minnesota Erosion and Stormwater Construction Site Management certification
 - 2. Prior to the start of construction, Contractor shall submit copies of valid (Minnesota Erosion and Stormwater Construction Site Management) Certified Installer and Erosion Control Supervisor cards to the Engineer.
- E. Preliminary Erosion and Sedimentation Control Plan:
 - 1. Submit not less than 2 weeks prior to anticipated start of clearing, grading, or other Work involving disturbance of ground surface cover.
 - 2. Include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Site plan indicating grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed BMPs.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed BMPs.
 - d. Preliminary schedule of BMPs, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 - g. Obtain approval of Plan by authorities having jurisdiction and Owner.
- F. Erosion and Sedimentation Control Schedule:
 - 1. Submit weekly.
 - 2. Include:
 - a. Proposed BMPs and timing of installation.
 - b. Grading operations.
 - c. Maintenance or repair required on BMPs.
 - d. Proposed BMPs during periods of suspension of Work.
 - e. e.
- G. Inspection Reports:

1. Submit report of each inspection for Project closeout or more often as requested by Engineer.
 2. Include condition of BMPs and required maintenance or repair.
- H. Maintenance Instructions: Provide instructions covering inspection and maintenance of BMPs to remain after Substantial Completion.

1.06 QUALITY ASSURANCE

- A. Comply with all requirements of MPCA General Permit when operations disturb 1-acre or more of land area.
- B. Do not begin clearing, grading, or other Work involving disturbance of ground surface cover until MPCA General Permit has been obtained when applicable; furnish Owner documentation required to obtain permit.
- C. Owner shall:
1. Develop a SWPPP
 2. Submit on-line MPCA General Permit application form as "owner" with appropriate fee.
 3. Comply with "owner" requirements of MPCA General Permit.
 4. Withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
- D. Contractor shall:
1. Cosign MPCA General Permit as "operator".
 2. Comply with "operator" requirements of MPCA General Permit.
 3. Postpone all land disturbance Work on Site until after Owner's on-line MPCA General Permit application form submittal.
 4. Conduct inspections and maintain log.
 5. Maintain SWPPP on site at all times (See MPCA website for more information: www.pca.state.mn.us).
 6. Make SWPPP and inspection records available to federal, state, and local officials within 72-hr. upon request for duration of permit and for 3-yr. following NOT.
 7. Submit NOT within 30 calendar days of final stabilization.
- E. Conduct operations to prevent, control and abate pollution of air, land and water per adopted and established Federal, State, and local rules, regulations and standards of the following as a minimum:
1. Minnesota Department of Natural Resources.

2. Minnesota Pollution Control Agency.
3. Minnesota Department of Transportation.
4. U.S. Army Corps of Engineers.

F. Comply with regulatory agencies for fertilizer and herbicide composition.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Water Treatment: MnDOT 3875
- B. Temporary Mulch: MnDOT 3882
- C. Bale Barrier:
 1. Mulch: MnDOT 3882, Type 1 or 3
 2. Size: 14-in. x 18-in. x 36-in. (minimum)
 3. Densely packed and tightly wrapped with two strands of twine or wire.
- D. Silt Fence:
 1. Type Machine Sliced (MS) consisting of a woven geotextile fabric installed by machine and supported by steel posts.
 - a. Fabric: MnDOT Specification 3886
 - b. Posts: MnDOT 3403, steel with weight of 1.25-lb./ft., length of 5-ft., embedment of 24-in., and spacing of 6-ft.
 - c. Fasteners: Plastic zip ties with tensile strength of at least 50 lb.
 2. Type Hand Installed (HI) consisting of a woven geotextile fabric installed by hand and supported by steel posts.
 - a. Fabric: MnDOT Specification 3886
 - b. Posts: MnDOT 3403, steel with weight of 1.25-lb./ft., length of 5-ft., embedment of 24-in., and spacing of 6-ft.
 - c. Fasteners: Plastic zip ties with tensile strength of at least 50 lb.
 3. Type Pre-Assembled (PA) consisting of a woven geotextile fabric supported by wood posts pre-attached to fabric.
 - a. Fabric: MnDOT Specification 3886
 - b. Posts: 2-in. by 2-in. hardwood with length of 4-ft., embedment of 18-in., and spacing of 5-ft.

- E. Flotation Silt Curtain: MnDOT 3887
- F. Erosion Control Blanket: MnDOT 3885
 - 1. Category 1: Will degrade in 6 weeks. Generally used in mowed areas next to shoulder, residential lawns, and park areas.
 - 2. Category 3: For slopes 3:1 to 2:1 (H:V) and less than 50 feet long; ditch bottoms with gradients 3 percent or less and flow velocities 6.5 ft/s and less; and concentrated flow areas such as edge drains.
 - 3. Category 4: For slopes 2:1 (H:V) and steeper, ditch bottoms 4 percent and less with flow velocities less than 7 ft/s; and areas with higher volumes of concentrated flow such as bridge side or end slopes to take drainage from the of curbs.
 - 4. Category 5: For stream bank restoration areas.
- G. Sediment Control Log: MnDOT 3897
- H. Flocculants: MnDOT 3898
- I. Filter Berm: MnDOT 3874
- J. Temporary Rock Construction Exit:
 - 1. Crushed Stone: MnDOT 3601, Washed Class I riprap
 - 2. Geotextile Fabric: MnDOT 3733, Type 5 - for separation of soil materials as indicated on Drawings.
- K. Rock Check Dam
 - 1. MnDOT 3601, Class II riprap
 - 2. Geotextile Fabric: MnDOT 3733, Type 4 - for separation of soil materials as indicated on Drawings

PART 3 EXECUTION

3.01 EROSION CONTROL SUPERVISOR

- A. Provide Erosion Control Supervisor with valid Minnesota Erosion and Stormwater Construction Site Management certification, authorized to represent Contractor on matters pertaining to Erosion and Stormwater Management, Work in public waters, MPCA General Permit compliance, and available to Site within 24-hr. of initial disturbance and daily when Work is taking place until final stabilization.
- B. Duties of Erosion Control Supervisor include the following:
 - 1. Amend SWPPP prior to beginning Work to identify Contractor's Erosion Control Supervisor as responsible party for implementation of SWPPP.

2. Implement SWPPP until Work is complete, entire Site has undergone Final Stabilization, and NOT has been submitted to MPCA.
 3. Ensure proper installation, functionality, and maintenance, clean-up, and removal of all erosion prevention and sediment control BMPs.
 4. Implement erosion and sediment control schedule.
 5. Coordinate Work of subcontractors and ensure full execution of BMPs for each operation and stage of Work.
 6. Oversee Work of subcontractors and ensure subcontractors undertake BMPs at each stage of Work.
 7. Prepare required weekly erosion control schedule and inspections with dates and times.
 8. Attend construction meetings to discuss erosion control schedule and inspections.
 9. Prepare erosion and sediment control Site Management Plans as required by Contract Documents or as directed by Engineer.
 10. Provide for BMPs for temporary Work necessary, but not indicated on Drawings.
 11. Ensure effective BMPs are in place, recommend changes to SWPPP for Engineer's approval, and amend SWPPP to document changes.
 12. Ensure acquisition of and compliance with applicable permits for borrow pits, dewatering, and temporary Work in rivers, lakes, and streams.
 13. Ensure full installation of BMPs before suspension of Work.
 14. Coordinate with federal, state, and local regulatory agencies on resolution of erosion and sediment control issues resulting from Work.
 15. Ensure that proper cleanup occurs from vehicle tracking on paved surface locations where sediment leaves Site.
 16. Ensure daily compliance with environmental laws, permits, and SWPPP narrative requirement.
 17. Ensure certification of installers for operations per MnDOT 2573.3.A.2, "Certified Installers".
- C. Erosion Control Supervisor is authorized to install, fix, or repair erosion or sediment control practices when a certified installer is unavailable.

3.02 CERTIFIED INSTALLERS

- A. Provide certified installer to install or direct installations of BMPs including the following:
- B. Provide at least one installer with a valid Minnesota Erosion and Stormwater Construction Installer Certification at time of installation.

- C. Failure to provide required certified installer may result in Engineer rejecting Work as unauthorized work per Contract Documents.

3.03 SCOPE

- A. Provide access for and cooperate with representatives of Owner and/or Engineer and meet any other requirements if so directed.
- B. Examine Site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.
- C. Delineate areas of Site not to be disturbed before Work begins.
- D. Install BMPs down gradient before, or in conjunction, with soil disturbing activities.
- E. Schedule Work to minimize amount of time disturbed soil surfaces are left exposed per MPCA General Permit requirements or more stringent requirements of local jurisdiction.
- F. Provide and maintain BMPs as required by Contract Documents and per permits required for Work.
- G. Adjust location of BMPs as necessary to maximize effectiveness of each device or measure.
- H. Schedule and phase construction in and around AES, as indicated on Drawings to minimize potential of sediment entering into these areas. Use measures such as hand clearing and grubbing, limiting bare soil exposure time, expediting construction activities, and immediately establishing final vegetation to minimize sediment loss potential.
- I. Provide erosion control and velocity dissipation BMPs within and along constructed stormwater channels to provide a non-erosive flow velocity, to minimize erosion of channels and embankments, outlets, adjacent stream banks, slopes, and downstream waters during discharge conditions.
- J. Stabilize normal wetted perimeter of any temporary or permanent drainage channel that drains water from any portion of Site, or diverts water around Site, within 200 lineal feet from property edge, or from point of discharge into any surface water. Stabilization of last 200 lineal feet shall be completed within 24-hr. of connecting to surface water or property edge.
- K. Stabilize remaining portions of any temporary or permanent drainage channels within 14 calendar days after connecting to surface water or property edge and Work in that portion of channel has temporarily or permanently ceased.
- L. Temporary or permanent drainage channels being used as sediment containment systems with properly designed ditch checks, bio rolls, silt dikes, etc. do not need to be stabilized during temporary period of use as sediment containment system. Area shall be stabilized within 24-hr. after removal of temporary sediment containment measures.
- M. Application of mulch, hydromulch, tackifier, polyacrylamide or similar erosion prevention practices is not acceptable stabilization of any temporary or permanent drainage channel with a continuous slope of greater than 2 percent.

- N. Contractor shall be in accordance with the Minnesota Stormwater Manual - Winter Construction Practices if the Work occurs past October 15th, unless approved by the Engineer.
1. Minnesota Stormwater Manual – Winter Construction Practice website:
https://stormwater.pca.state.mn.us/index.php?title=Winter_construction_practices_for_site_stabilization,_erosion_prevention_and_sediment_control
- O. Provide temporary or permanent energy dissipation BMPs at pipe outlets within 24-hr. of connecting to surface waters.
- P. Direct discharges from BMPs to vegetated areas of Site (including natural buffers) to increase sediment removal and maximize stormwater infiltration unless infeasible due to lack of pervious or vegetated areas.
- Q. Recover sediment and restore property to pre-existing conditions at own cost when sediment loss from Site occurs.
- R. In all cases, if permanent preventive measures have been installed, temporary BMPs are not required.
- S. Storm Water Runoff:
1. Control increased storm water runoff due to disturbance of surface cover due to construction activities.
 2. Prevent runoff into sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 3. Anticipate runoff volume due to most extreme short term rainfall events that might occur in 25-yr.
- T. Erosion On Site:
1. Minimize wind, water, and vehicular erosion of soil on Site due to construction activities.
 2. Control movement of sediment from temporary soil stockpiles.
 3. Prevent development of ruts due to equipment and vehicular traffic.
 4. Restore eroded areas at no cost to Owner if erosion occurs due to non-compliance with these requirements.
- U. Erosion Off Site:
1. Prevent erosion of soil and deposition of sediment on other properties caused by water leaving Site due to construction activities.
 2. Prevent windblown soil from leaving Site.
 3. Prevent tracking of mud onto public roads outside Site.

4. Prevent mud and sediment from flowing onto sidewalks and pavements.
 5. Restore eroded areas at no cost to Owner if erosion occurs due to non-compliance with these requirements.
- V. Sedimentation of Waterways On and Off Site:
1. Prevent sedimentation of waterways on and off Site, including rivers, streams, lakes, ponds, open drainage ways, and sewers.
 2. Unless Project has received approval or certification for depositing fill into a surface water, remove sediment deposits within surface waters and restabilize exposed soil area within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access restraints. If precluded, perform removal and restabilization within 7 calendar days of obtaining access. Contractor is responsible for contacting all local, regional, State, and Federal authorities before working within surface waters and obtaining applicable permits.
- W. Open Water: Prevent standing water that could become stagnant.
- X. Shape exposed soil and incorporate BMPs as approved by Engineer before suspending grading operations.

3.04 INSTALLATION

- A. All BMPs shall be installed prior to Work beginning, where applicable.
- B. Temporary Sediment Basins and Traps:
1. Construct temporary sediment basins concurrently with start of soil disturbing activities when required.
 2. Direct storm water runoff from localized watershed to basins.
 3. Mulch, seed, or both, exposed side slopes of basins meeting MPCA and regulatory requirements.
- C. Temporary Rock Construction Exit:
1. Provide and use at construction exit to public right-of-way. Location indicated on Drawings is for reference only. Actual location to be determined by Contractor.
 2. Width: As required; 25-ft. minimum.
 3. Length: 40-ft. minimum.
 4. Excavate minimum of 8-in.
 5. Place geotextile fabric full width and length, with minimum 12-in. overlap at joints.
 6. Place and compact at least 8-in. of MnDOT Class I riprap.

7. Prevent excessive tracking of mud onto right-of-way when necessary as determined by Engineer by providing wheel washing area out of direct traffic lane with drain into sediment trap or alternate Engineer approved BMP.
- D. Linear Sediment Barriers: Made of bale barriers, silt fences, sediment control logs, or filter berms.
1. Provide linear sediment barriers:
 - a. Where indicated on Drawings, as directed by Engineer, and as necessary.
 - b. Along downhill perimeter edge of disturbed areas, including soil stockpiles, and parallel to contour of land, with ends wrapped uphill to prevent flow around them.
 - c. Along top of slope or top bank of drainage channels and swales that traverse disturbed areas.
 - d. Along toe of cut slopes and fill slopes.
 - e. Perpendicular to flow across bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200-ft. apart.
 - f. Across entrances to culverts that receive runoff from disturbed areas.
 - g. Space sediment barriers with the following maximum slope length upslope from barrier:
 - 1) Slope of less than 2%: 100-ft.
 - 2) Slope between 2 and 5%: 75-ft.
 - 3) Slope between 5 and 10%: 50-ft.
 - 4) Slope between 10 and 20%: 25-ft.
 - 5) Slope over 20%: 15-ft.
- E. Silt Fence:
1. Store and handle fabric per ASTM D4873.
 2. Install with top of fabric at nominal height and embedment as specified.
 3. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18-in., with extra post.
 4. Type Machine Sliced (MS)
 - a. Mechanically install geotextile with salvaged edge on top.
 - b. Place geotextile directly behind soil-slicing blade as it works to achieve consistent placement and depth. Do not plow soil if using slicing method.

- c. Roll wheels of a tractor or skid steer on each side of geotextile at least 2 times to compact soil immediately next to geotextile.
 - d. Install posts adjacent to back face of geotextile with studs facing away from geotextile fabric.
 - e. Secure each post by inserting three plastic zip ties through geotextile.
5. Type Hand Installed (HI)
- a. Install geotextile by hand in areas inaccessible by a machine.
 - b. Place geotextile into a trench 6 in deep and 6 in wide with bottom edge of geotextile wrapping back up to soil surface. Backfill and tamp trench for compaction.
 - c. Install posts adjacent to back face of geotextile with studs facing away from geotextile fabric.
 - d. Secure each post by inserting three plastic zip ties through geotextile.
6. Type Preassembled (PA):
- a. Install preassembled silt fence with attached wooden stakes in small areas less than 1/4-acre.
 - b. Pound stakes at least 18-in. into ground.
 - c. Install geotextile with salvaged edge on top.
 - d. Place bottom edge of geotextile into a trench 6 in deep and 6 in wide.
 - e. Backfill and tamp trench for compaction.

F. Bale Barrier:

- 1. Trench bales into ground 4-in. and stake with two wood stakes of length allowing placement of stake so top remains flush with top of bale when embedded into ground at least 10-in.

G. Filter Berm:

- 1. Provide along contour of slope and perpendicular to sheet flow for slope breaks and perimeter control.
- 2. Provide so beginning and end of installation points slightly up slope to create a "J" shape at each end to contain runoff from above and prevent it from flowing around ends of berm.
- 3. Provide at top of slope to control velocity of flow running onto slope, and to spread runoff out into sheet flow for slopes that receive runoff from above.
- 4. Immediately seed compost filter berms upon installation.

H. Rock Check Dam

1. Place perpendicular to the flow of the ditch and have a height of 24 inches above ditch flow line.
2. Provide perpendicular to ditch gradient for ditch checks such that top of berm in middle of ditch is 6 inches lower than the end points of the rock berm at the ditch side slopes to form a weir.
 - a. For permanent ditch check dams, reduce the height to 16 inches and modify the side slopes to 1:6 (V:H).

I. Sediment Control Log:

1. Prepare shallow trench for sediment control log to be placed.
2. Backfill and compact upgrade side of sediment control log with soil.
3. Stake log through back half of log at 45-degree angle with top of stake pointed upstream. Space stakes every 2-ft. minimum.
4. If using more than one sediment control log for length, overlap ends 6-in. and stake both ends.
5. For ditch checks, place log perpendicular to flow and in a crescent shape with ends facing upstream.
6. Use logs with a center section of ditch check one log diameter lower than ends. Space stakes every 12-in. minimum.

J. Flotation Silt Curtain:

1. Provide flotation silt curtain meeting following requirements:
 - a. Contains connecting device at each end for joining sections together with a depth to reach bottom of water body, and designed to prevent silt from permeating through connection and strength necessary to prevent ripping out
 - b. Secure both ends of Light Duty Floating Silt Curtain per MnDOT 3887, "Flotation Silt Curtain", to land with steel fence posts per MnDOT 3403, "Hot-Rolled Steel Fence Posts", and extend curtain at 45-degree angle from both ends.
 - c. Anchor curtain in still water with at least 40-lb. anchors at intervals no greater than 100-ft. along length of curtain.
 - d. Anchor curtain in moving water with at least 300-lb. anchors at intervals no greater than 50-ft. along length of curtain.
 - e. Mark each anchor with buoy in navigable waters.
 - f. Keep curtain as tight to Work area or shoreline as possible not to exceed one-fourth of stream width.

K. Storm Drain Inlet Protection:

1. Implement BMPs to protect all given inlets throughout Work to prevent passage of sediments into and through underground drainage systems.
2. Protect storm drain inlets, including manholes, catch basins, curb inlets, and other drop type inlets constructed for ingress of surface water runoff into underground drainage systems.
3. Protect storm drain inlets with sediment capture BMPs before soil disturbing activities result in sediment laden storm water runoff entering inlet.
4. Provide effective storm drain inlet protection until completion of paving or stabilizing of sources with potential for discharging to an inlet.
5. Prevent or minimize potential for unsafe flooding or siltation problems.
6. Regularly clean out BMPs and provide emergency overflow to reduce flooding potential.
7. Place BMPs without creating driving hazards or obstructions.

L. Storm Drain Curb Inlet Sediment Trap:

1. Provide for any inlet with potential to receive stormwater runoff from Site.
2. Manufactured drop in product: As indicated on Drawings.
3. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
4. Bale barrier blocking entire inlet face area; anchor into pavement.

M. Inlet Protection

1. Implement inlet protection to protect all inlets throughout the Work to prevent passage of sediments.
2. Provide effective inlet protection until stabilizing of sources with potential for discharging to an inlet.

N. Storm Drain Drop Inlet Sediment Traps:

1. As indicated on Drawings.

O. Temporary Splash Pads:

1. Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

P. Stockpiles and berms:

1. Provide and maintain perimeter protection as necessary.

2. No stockpiles containing more than 10-cu.yd. of material shall be located with a down-slope drainage length of less than 25-ft. from the toe of pile to a roadway or drainage channel.

3.05 EMERGENCY WORK

- A. Conduct Emergency corrective work followed by installation of necessary BMPs within 24-hr. written notice from Engineer of sudden occurrence of a serious and urgent nature that is beyond normal maintenance of BMPs, and which requires immediate mobilization and movement of necessary personnel, equipment, and materials to emergency site.

3.06 MAINTENANCE

A. General:

1. Inspect BMPs weekly, within 24-hr. after end of any storm that produces 1/2-in. or more rainfall at Site, and daily during prolonged rainfall.
2. Inspect vehicle exit areas from Site daily and keep clean of excess soil by routine sweeping with Engineer approved pickup broom.
3. Repair or replace plugged, torn, displaced, damaged, or non-functioning BMPs within 24-hr. of discovery or as soon as practicable as approved by Engineer.
4. Maintain BMPs until permanent measures have been established.
5. Should Contractor fail to provide appropriate BMPs as determined by Engineer, Owner may issue a written order to Contractor. Contractor shall respond to written order within 24-hr. with sufficient personnel, equipment, and/or materials and conduct required Work or be subject to a daily Contract Price deduction of \$500 for non-compliance, on a calendar day basis.
6. Should installed BMPs fail as determined by Engineer, Contractor shall correct cause of failure and remedy all sediment deposition to fullest extent possible. If corrective action is not taken in a timely manner, Owner may issue a written order to Contractor. Contractor shall respond to written order within 24-hr. with sufficient personnel, equipment, and/or materials and conduct required Work or be subject to a daily Contract Price deduction of \$500 for non-compliance, on a calendar day basis.

B. Temporary Sediment Control Devices:

1. Remove sediment from devices such as bale barriers, silt fences, ditch checks, sediment control logs, and perimeter controls weekly and when sediment reaches one-third of height of device. Reshape area as indicated on Drawings.
2. Replace non-functional devices and devices damaged by sediment removal.
3. Perform sediment removal within 24-hr. of discovery or as soon as field conditions allow access.

C. Filter Berms:

1. Remove accumulated sediment or install new berm when sediment reaches one-third of berm height.
 2. Expand, enlarge, or augment filter berm with additional BMPs if concentrated flows bypass or breach berm.
 3. Add filter material as necessary to maintain dimensions of berm.
- D. Sediment Basins and Traps:
1. Drain basin and remove sediment when depth of sediment collected in basin reaches 50% of height of riser or 50% of storage volume.
 2. Complete drainage and removal within 72-hr. of discovery or as soon as field conditions allow access.
 3. Remove sediment to original designed or excavated grade or as necessary to restore function of BMP.
 4. Clean out and shape temporary sedimentation basins intended for use as permanent water quality management basins as indicated on Drawings.
- E. Storm Drain Inlet Protection Devices:
1. Clean, remove sediment, or replace storm drain inlet protection devices on a routine basis to ensure full functionality of devices for next rainstorm event.

3.07 CLEANING

- A. Refer to Section 01 7419 - Construction Waste Management and Disposal for additional requirements.
- B. Remove and dispose of BMPs after completing Work unless otherwise required by Contract Documents or directed by Engineer.
- C. Clean out BMPs that are to remain as permanent measures.
- D. Place removed sediment in appropriate locations on Site to form suitable surface for turf establishment; do not remove from Site.
- E. Where removal of BMPs would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.
- F. Remove silt curtain upon completion of Work. Do not allow re-suspension of sediment or loss of trash and oil into water during silt curtain removal.

END OF SECTION

**SECTION 31 3700
RIPRAP**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental to stone riprap placement as indicated in the Contract Documents.

1.02 DEFINITIONS - (NOT USED)

1.03 PRICE AND PAYMENT PROCEDURES

- A. Riprap:
 - 1. Measurement shall be on a cubic yard (CY) unit price basis of each type and class. Payment at the unit price bid shall include all Work indicated in the Contract Documents.
- B. Filter Material:
 - 1. Measurement will not be made. Cost for filter material shall be considered incidental to riprap and no claim for compensation or extra work will be accepted. Type of filter material shall be as specified in plans; otherwise refer to MnDOT Specification Section 3733.

1.04 REFERENCE STANDARDS

- A. MnDOT Specification Section 2511 - Riprap.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Riprap: MnDOT 3601.
- B. Geotextile Filter: MnDOT 3733
 - 1. Type 3 - For use under Class I and II random riprap.
 - 2. Type 4 - For use under Class III and IV random riprap on slopes no steeper than 3:1, horizontal to vertical. Also used to wrap pipe intakes, see intake detail on Plans.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. Excavate and shape foundation for riprap at locations and to cross-sections indicated in MnDOT Standard Plate 3139 relatively smooth and free of stones, sticks, and other debris or irregularities that might puncture geotextile filter.
- B. Place geotextile filter with longest dimension parallel to direction of water flow.

- C. Overlap geotextile filter splices and joints at least 18 inches, except overlap splices and joints placed under water shall be 36 inches.
- D. Provide shingled geotextile filter joint laps in flow direction and from top to bottom of slope to direct water flow over joint without undermining geotextile filter.
- E. Bury upgrade edges of geotextile filter minimum of 6-inches to direct water flow over fabric and prevent undermining.
- F. Use edge stakes, stones, or other material at locations and in quantities as approved by Engineer, to prevent movement of geotextile filter during placement of riprap.
- G. Do not operate construction equipment directly on top of geotextile filter or riprap after placement.
- H. Do not dump stone at top of slope and allow to roll down onto geotextile filter.
- I. Begin riprap installation at lowest elevation and work upward.
- J. Do not drop stones onto geotextile filter from height greater than 1-foot.
- K. Position random riprap to provide uniform distribution of various sizes of stone and produce a dense, well-keyed layer of stones with the least practical voids volume.
- L. Level surface flush with surrounding ground to produce a reasonably uniform appearance with thickness required by in Contract Documents.

3.02 THICKNESS REQUIRMENTS

- A. Provide minimum thickness of at least 80 percent, and average thickness of at least 95 percent of thickness required in Contract Documents.

END OF SECTION

**SECTION 32 9219
SEEDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental to seeding of disturbed areas as indicated in Contract Documents.
- B. Any specification reference herein, shall be from the latest revision of the published standard.

1.02 DEFINITIONS

- A. BFM = Bonded Fiber Matrix
- B. RFM = Reinforced Fiber Matrix
- C. SFM = Stabilized Fiber Matrix
- D. PLS = Pure Live Seed
- E. Nonnative Seed Mix = a seed mix comprised species are introduced to the region in which the seed mix will be planted. The terms nonnative and introduced species are synonymous. Native status can be found by visiting the Biota of North America Program website (bonap.org).
- F. Native Seed Mix = a seed mix comprised of species that originated in the region in which the seed mix will be planted. Native status can be found by visiting the Biota of North America Program website (bonap.org).

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Areas to be seeded will be measured to the nearest one-tenth acre. Payment for seeding will be made at the contract unit price and such payment will constitute full compensation for all materials (including fertilizer), labor, equipment and all other times necessary and incidental to complete the work.
- C. All payments within the section must follow Table 9219-1 for payment.

Table 9219-1
Payment Schedule

Phase of Completion	% of Payment
Seeded	60%
Established Seed	40%

D. Buffer Strip Seeding

1. Seeding shall be paid by the acres as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Soil Preparation
 - b. Applying and Establishing Seed
 - c. Mulch or Erosion Control Products

E. Sideslope Seeding

1. Sideslope Seeding shall be paid by the acres as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Soil Preparation
 - b. Applying and Establishing Seed
 - c. Mulch or Erosion Control Products

F. Bench Seeding

1. Bench Seeding shall be paid by the acres as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Soil Preparation
 - b. Applying and Establishing Seed
 - c. Mulch or Erosion Control Products

G. Road Ditch Seeding

1. Road Ditch Seeding shall be paid by the square yard (SY) as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Soil Preparation
 - b. Applying and Establishing Seed

- c. Mulch or Erosion Control Product
- H. Mowing
 - 1. Buffer Strip shall be paid by the acres as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Mowing of Buffer strip
- I. Weed Spaying
 - 1. Weed Spraying shall be paid by the acres as measured by the Engineer and shall include (as incidental) but not be limited to;
 - a. Any Chemicals and water
- J. Temporary Seeding
 - 1. Temporary Seeding shall be paid by the acre as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Soil preparation
 - b. Applying and Establishing Seed
 - c. Mulch or Erosion Control Product

1.04 REFERENCE STANDARDS

- A. MnDOT Specification Section 2574 - Soil Preparation
- B. MnDOT Specification Section 2575 - Establishing Vegetation and Controlling Erosion
- C. MnDOT Specification Section 3876 - Seed
- D. MnDOT Specification Section 3884 – Hydraulic Erosion Control Products
- E. MnDOT Specification Section 3885 - Rolled Erosion Control Products
- F. MnDOT Seeding Manual
- G. MPCA General Storm Water Permit

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Product Data: Provide manufacturer's data on the following:
 - 1. Nonnative Seed Mixes:
 - a. Documentation indicating scientific name, common name, type of seed, percent germination, percent purity, and date of testing.

2. Native Seed Mixes:
 - a. Documentation indicating scientific name, common name, percent PLS, percent inert material, seed mix species composition, and year seed mix was packaged.
 - b. Seed additive product to be used. Documentation indicating additive product is sterile.
 - c. Onsite seed mixing shall be done only in the presence of the Engineer.
 3. Seed tags from bags used.
 4. Mulch
 5. Rolled erosion control products and accessories
- D. Maintenance Data:
1. Include maintenance instructions, cutting method and maximum grass height, herbicides used (if applicable), and watering recommendations.

1.06 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for herbicide composition.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Nonnative seed mixes:
 1. Deliver in sealed containers. Opened or damaged packaging is not acceptable.
 2. Containers shall indicate seed mixture percentages, percent germination, percent purity, date of production, net weight, date of packaging, and location of packaging.
 3. Protect from moisture, direct sunlight, rodents, and insects, and store at 50 °F and 10 percent humidity.
- B. Native seed mixes:
 1. Deliver in sealed containers. Opened or damaged packaging is not acceptable.
 2. Containers shall indicate the scientific and common name of every species included in the mix, percent composition (by weight and/or seed count) of each individual species, date of production, net weight, date of packaging, and location of packaging.
 3. Native seed mix with local or regional ecotypes are preferred.
 4. Protect from moisture, direct sunlight, rodents, and insects, and store at 50 °F and 10 percent humidity.
- C. Seed from the latest season's crop shall be stored for use no later than the end of the first growing season following harvest.

PART 2 PRODUCTS

2.01 MATERIALS

A. Seed:

1. Seed shall be the latest season's crop and shall be delivered in original sealed packages bearing the producer's warranted analysis for percentages of mixtures, purity, germination, weed seed content, and inert material.
2. Seed shall be labeled in conformance with U. S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable state seed laws.
3. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.
4. Nonnative seed mixes (Any MnDOT mix beginning with a 2)
 - a. Minimum Acceptable Seed Quality standards for all nonnative grass seed utilized are as follows:
 - 1) Purity 95%, Germination 85%, Weed Seed Content less than 0.5%, Noxious Weeds 0.0%, Inert Material less than 3%.
 - b. All seed shall have been tested for germination as specified within six months prior to date of seeding.
 - c. All nonnative grass seed mixtures, or sod composition shall conform to the species and cultivar requirements detailed in MnDOT Specification Section 3876.
 - d. Onsite seed mixing shall be done only in the presence of the Engineer.
5. Native seed mixes (Any MnDOT mix beginning with a 3)
 - a. Minimum Acceptable Seed Quality standards for all native seed utilized are as follows:
 - 1) Pure Live Seed (PLS) 80%, Noxious Weeds 0.0%, Inert Material less than 20%.
 - b. All native seed mixes shall conform to the species requirements of the specified MnDOT or BWSR mix. Seed mixes must include the scientific and common name of every species included along with the percent composition (by weight and/or seed count) of each species. Species substitutions must be approved by the Engineer before use.
 - c. Seed mixes shall be separated at the time of purchase to ensure the seed mix can be used with a native seed drill, where small, fluffy, and large seeds are placed in separate boxes.
 - d. Do not mix or blend seed except in the presence of a knowledgeable contractor who is familiar with native seeding methodology.

- e. If seeding occurs on or after September 20, then Winter Wheat shall be substituted when purchasing the seed mix.
- B. Mulch Products: MnDOT 3882
- 1. For mulching over nonnative seed mixes:
 - a. Type 1: MnDOT 3882, Type 3: MnDOT 3882, or Type 8: MnDOT 3882
 - 2. For mulching over native seed mixes:
 - a. Type 3: MnDOT 3882
 - 3. Disc anchor to secure mulch.
- C. Hydraulic Erosion Control Products: MnDOT 3884
- 1. Bonded Fiber Matrix (BFM), Type 8: MnDOT 3884, or Reinforced Fiber Matrix (RFM): MnDOT 3884, or Stabilized Fiber Matrix (SFM): MnDOT 3884.
- D. Rolled Erosion Control Products: MnDOT 3885
- 1. For covering nonnative seed mixes:
 - a. Erosion Control Blanket: MnDOT Table 3885.2-1, Table 3885.2-2
 - 1) Category 20
 - 2) Category 25
 - 3) Category 30
 - 4) Category 35
 - b. Erosion Control Blankets shall contain biodegradable thread.
 - 2. For covering native seed mixes:
 - a. Erosion Control Blanket: MnDOT Table 3885.2-1, Table 3885.2-2
 - 1) Category 20
 - b. Category 30
 - c. Erosion Control Blankets shall contain biodegradable thread.
 - d. Erosion Control Blankets shall not contain wood fiber.
 - 3. Staples to secure blanket according to MnDOT Table 2575-2
- E. Seed mix additive products
- 1. A seed mix additive shall be used when seeding with a native seed mix.
 - 2. Seed mix additives shall be sterile.

3. Additives include:
 - a. Sawdust
 - b. Parboiled rice hulls
 - c. Cracked corn
 - d. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous plant growth.

PART 3 EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Notify Engineer of intended seeding time frames prior to commencing Work.
- B. Note: A variety of different seed mixtures, or a combination of seed may be specified for use on this Project as indicated on Drawings.
- C. All disturbed areas shall be seeded as indicated on Drawings.
- D. Contractor shall be in accordance with the Minnesota Stormwater Manual - Winter Construction Practices if the Work occurs past October 15th, unless approved by the Engineer.
- E. Minnesota Stormwater Manual – Winter Construction Practice website:
https://stormwater.pca.state.mn.us/index.php?title=Winter_construction_practices_for_site_s_tabilization,_erosion_prevention_and_sediment_control

3.02 SOIL PREPARATION

- A. Prepare subgrade and topsoil per MnDOT 2574.3, and 31 2316 - Excavation, prior to Seeding.
- B. Finish Grading
 1. The seedbed shall be prepared with a spring tooth field tiller, disk, or similar equipment to a minimum depth of three (3) inches.
 - a. If the area to be seeded has dried unusually hard, a heavy soil conditioner shall be used to loosen the surface. All clods, rocks, blacktop chunks, roots, brush, and other undesirable materials that would interfere with seeding operation shall be removed and disposed of as directed by the Engineer.
 2. If weeds have been allowed to grow, they shall be mowed and raked off the area to be seeded prior to preparing the seedbed.

3.03 SEEDING SCHEDULE

- A. Contractor shall seed all portions of the Work that have not been actively worked in accordance with Table 9219-2, or after 2,500 linear feet of construction progress, whichever is less.

**Table 9219-2
Non-Actively Worked Seeding Schedule**

Type of Slope or Disturbance Area	Time Area can remain open without being actively worked	
	Normal Water	Special/Impaired Water
Steeper than 3:1	14 days	7 days
10:1 to 3:1	14 days	7 days
Flatter than 10:1	14 days	7 days
Ditch Buffers	14 days	7 days
Ditch Side Slopes	2,500 Linear Feet	
Within 200 feet of Surface Water	1 day	

- B. All seeding operations shall be done separately and prior to the application of any mulch material. Do not seed areas in excess of that which can be mulched in 24 hours following seeding.
- C. Seeding Timeline:
 - 1. Adjustments to seeding dates from planting table below may be modified in specific circumstances by Engineer upon request based on weather conditions and project timeline.

**Table 9219-3
Season of Planting**

Seed Mixture Number	Spring	Fall
21-111	May 1 – Aug. 1	---
21-112	---	Aug. 1 – Oct. 1
22-111*	April 1 – July 20	July 20 – Oct. 1
25-142*	April 1 – July 20	July 20 – Sept. 1
32-241	April 15 – July 20	Sept. 20 – Oct. 20**
33-261	April 15 – July 20	Sept. 20 – Oct. 20**
34-181	April 15 – July 20	Sept. 20 – Oct. 20**
34-262	April 15 – July 20	Sept. 20 – Oct. 20**
35-241	April 15 – July 20	Sept. 20 – Oct. 20**
Any mix beginning with a 3	April 15 – July 20	Sept. 20 – Oct. 20**
Low Diversity Buffer General – BWSR pilot mix	April 15 – July 20	Sept. 20 – Oct. 20**
Supplemental native wildflower mix	---	Sept. 20 – Oct. 20**
<p>* For the portion of Minnesota north of, and including T.H. 2, plant seed mixtures from 22-111 to 25-142 from April 15 to Sept 20.</p> <p>** These seed mixes may be approved for winter planting by the Engineer. See "Winter Seeding" section 3.06.G for further details.</p>		

2. If Work is completed outside of the seeding window, temporary stabilization is required. See Temporary Seeding section (3.07) below for guidelines on temporary seeding for erosion control.
3. Seeding will not be permitted or paid outside of the timeframes listed in the table above, unless approved by the Engineer.

3.04 SEEDING RATE AND MIXING

A. Seeding Application Rate:

1. If using a nonnative seed mix:
 - a. Adjust bulk seeding rate needed to achieve required pure live seed (PLS) rate for mixture per MnDOT 2575.3.B calculations.
2. If using a native seed mix:
 - a. Purchasing bulk seed is not recommended for native seed mixes. Seed PLS according to rates recommended on MnDOT 3876 Table 1.
3. Both temporary and permanent mixtures should be applied at this seeding rate.

- B. Seed mixing is allowed as approved by the Engineer. Contractor shall submit a seed mixing plan for approval prior to seed purchase.

3.05 SEEDING METHODS

- A. Method selection depends on seeding location (ie buffer strip, sideslope, bench, or road ditch seeding).
- B. Hand Broadcast or Drop Type Seeding:
 - 1. Use this seeding method for seeding areas that are too small or inaccessible with larger equipment.
 - a. This includes seeding sideslopes and road ditches with greater than 2:1 grade.
 - 2. Native seed mix shall be mixed with additive prior to sowing.
 - 3. When broadcast seeding, the planting area and seed mix shall be split up into working zones to ensure adequate distribution of native seed mix across the entire planting site area.
 - a. 50 percent of the seed mixture shall be broadcasted in each zone uniformly in one direction. 50 percent of the seed mixture shall be broadcasted at a right angle to the first pass. The seed shall be uniformly distributed in a minimum of 2 directions at right angles to each other. Any remaining seed should be broadcast in a third direction within the particular zone.
 - b. This shall be repeated for each working zone in the planting area.
 - 4. A drop type seeder equipped with separate seed box for fluffy seed and soil packer assembly may be used in lieu of drill with disc openers.
 - 5. Cyclone or spinner type seeder shall only be used in areas less than 1-acre, or on areas inaccessible to other equipment as approved by Engineer.
 - 6. Do not broadcast seed with wind velocities greater than 15-mph.
- C. Mechanical seeding with seed drill:
 - 1. Use seed drill method for seeding areas that are easily accessible by large equipment.
 - a. This includes seeding buffer strips, benches, road ditches, and sideslopes with less than 2:1 grade.
 - b. If seeding with a native seed mix that includes wildflowers (any MnDOT seed mix beginning with a 3), use native seed drill capable of accurately metering the types of seed planted and capable of maintaining a uniform mixture of seeds during drilling.
 - 2. Seed drill shall be capable of accurately metering types of seed planted and capable of maintaining uniform mixture of seeds during drilling. Drill shall have disk furrow openers and packer assembly to compact soil directly over drill row.

3. Operate seed drill in direction at right angles to direction of surface drainage.
4. Seed rows spaced no greater than 8-in. apart.
5. Place seeds from 1/8-in to 3/8-in. final planting depth.
6. The seed shall be uniformly distributed in a minimum of 2 directions at right angles to each other.
7. Lightly compact soil bed of mechanically sown seed with cultipacker immediately after seeding to provide seed to soil contact.
8. If using a roller, it shall not exceed 225 kg/m (150 pounds per foot) of roller width.
9. Do not drill seed with wind velocities greater than 15-mph.

D. Hydroseeding:

1. Hydroseeding is not recommended for use with native plant seed mixes.
2. All hydroseeding must be performed with a 2 stage application. For seeding, mix seed with a minimum amount of carrier (no tackifier) and spray onto prepared site. After the seed application, hydromulch may be applied (see Section 3.03.F).

E. Interseeding:

1. Perform interseeding if seeding into temporarily mulched areas or if drilling additional seed into previously seeded areas. This includes when seeding native seed mixes into temporarily seeded cover crops.
2. Interseeding shall be performed on slopes with less than 3:1 grade.
3. Use an interseeding drill and at least one box fine seed and at least one box for larger seeds or fluffy seeds.
4. Operate the drill to slice through the vegetative mat and make a furrow 1 in. wide and from 3/8 in. to 1 in. deep in the underlying soil.
5. Place seeds in the furrows through the drill seed disk openings.
6. Drop the seed onto the ground surface from the fine seed box.
7. Place the large or fluffy seed to a final planting depth from 1/4 in to 3/8 in.

3.06 PERMANANT SEEDING

- A. Perform permanent seeding on areas of exposed soil in accordance with the timeline set in Table 9219-2 after all grading Work is completed. If work is temporarily paused, see Temporary Seeding section (3.07) below for guidelines on temporary seeding for erosion control.
- B. Buffer Strip and Bench Seeding

1. Seed shall be uniformly sown in the buffer area as shown on the drawings by using a seed drill or hydroseeding. See section 3.05 for approved seeding methods.
 - a. Hydromulching is not permitted to occur simultaneously with hydroseeding. If hydroseeding, an additional hydromulching pass shall be required.
2. Buffer strips and/or benches shall be seeded in accordance to Table 9219-2.
3. Buffer strips and/or benches graded during the dormant period shall be seeded at the earliest opportunity or as approved by the Engineer.
4. The area shall be smoothed and the seedbed prepared in accordance to Section 3.02 above. At no time shall seeding be delayed to avoid this requirement.

C. Sideslope Seeding

1. Seed shall be uniformly sown over the bank slopes as shown on the drawings by hand broadcasting, using a drop type seeder or hydroseeding. See section 3.05 for approved seeding methods.
 - a. Hydromulching is not permitted to occur simultaneously with hydroseeding. If hydroseeding, an additional hydromulching pass shall be required.
2. Sideslopes, or ditch bank slopes, to normal water edge shall be seeded within 2,500 linear feet after after finished bank slopes have been excavated, unless otherwise approved by the Engineer.
3. Bank slopes excavated during the dormant period shall be seeded at the earliest opportunity or as approved by the Engineer.
4. Slopes shall be smoothed and the seedbed prepared in accordance to Section 3.02 above. At no time shall seeding be delayed to avoid this requirement.
5. Seeding shall be performed on end slopes of all ditches constructed as outlet for drop inlets, pipe inlets or tile outlets.
 - a. If pipe inlets, drop inlets or tile outlets are installed after the bank slope in that reach has been seeded, the disturbed areas of the bank slope shall be reseeded. No additional payment will be made for this reseeded.
6. Immediately after the seed has been sown, the entire area shall be raked, dragged, or harrowed sufficiently to cover the seed unless a cultipacker seeder or press drill was used. Appropriate cover shall be used as specified on the construction drawings.

D. Road Ditch Seeding

1. Depending on the grade, road ditches shall be seeded similarly to sideslopes or buffer strips.

E. Seeding, Berms, Spoil Banks, and other areas

1. Seeding shall be performed immediately after completion of the finished shaping, unless otherwise approved by the Engineer.

2. All berm and soil bank leveling work completed during the dormant period shall be seeded at the earliest opportunity in the following spring seeding period.
3. Seed shall be uniformly sown over the bank slopes as shown on the drawings using a machine-operated mechanical seeder or hydroseeder.
 - a. Hand seeding around inlets or pipes and for a distance of ten (10) feet back on the approach to the inlet of the pipe shall be required to insure adequate distribution of seed.
 - 1) If seeding a native or nonnative seed mix, seed to a depth of not more than one-half inch (1/2) inch.
 - 2) If seeding a cover crop (Oats or Winter Wheat), seed to a depth of between one and one-half (1 1/2) and two (2) inches.
4. All pipe outlets and pipe drop inlets shall be cleaned of any material which may have been deposited in the inlets during seeding operations.
5. Lightly compact soil bed of mechanically sown seed with cultipacker immediately after seeding to provide seed to soil contact.
6. Any undesirable materials described above which are uncovered or exposed during seeding operations or which may be present in the seeded area shall be removed and buried or otherwise disposed of at locations approved by the Engineer.

F. Permanent Seeding into Temporarily Mulched/Blanketed Areas:

1. Permanently seed areas previously temporarily mulched. Without performing additional tillage or site prep work, the Contractor may use an interseeding drill to drill seed directly into temporarily mulched or temporarily seeded areas. See section 3.05.e for guidance on interseeding. In lieu of using an interseeding drill, the Contractor may lightly disc the mulched areas before seeding. Leave the existing cover in place to serve as mulch.

G. Winter Seeding

1. Winter seeding may be approved by the Engineer for application of native seed mixes. Site must have been temporarily seeded with a cover crop the previous spring or fall to ensure adequate erosion control is present.
2. Dormant seed after the fall seeding date and when soil temperatures 1 in. below surface are no greater than 40 degrees Fahrenheit.
3. Snow seeding can be done between Dec 1 – March 15 if there is less than 4 inches of light, wet, or fluffy snow on the ground and temperatures are near or above freezing. This allows the seed to melt through the snow to the soil, achieving good seed to soil contact, which allows seeds to germinate upon warm up in the spring. Snow sowing should not occur on icy or crusty snow

3.07 TEMPORARY SEEDING AND MULCHING

- A. Perform temporary seeding in addition to temporary mulching on areas of exposed soil when the Work has permanently or temporarily ceased and will not resume for at least 14 calendar days, or in accordance with Table 9219-2, whichever comes first. Temporary seeding areas include stockpiles, areas where grading is completed, and exposed critical areas within 200-ft. of surface water to prevent off Site sedimentation in AES and/or to comply with MPCA and regulatory requirements.
 - 1. Temporary stockpiles without significant silt, clay, or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) and constructed base components of pavements and similar surfaces are exempt from this requirement.
- B. Temporary seed mix selection
 - 1. Use MnDOT seed mix below for temporary seed mix depending on time of year and permeant seed mix to follow temporary seeding.
 - a. If temporary seeding occurs in spring (May 1 – Aug. 1) and a native seed mix will follow at a later date, use MnDOT 21-111.
 - b. If temporary seeding occurs in fall (Aug. 1 – Oct. 1) and a native seed mix will follow at a later date, use MnDOT 21-112.
 - c. If temporary seeding a nonnative seed mix, use MnDOT 22-111 regardless of time of year.
- C. Seeding of temporary seed mix
 - 1. All seeding operations shall be done separately and prior to the application of any mulch material.

3.08 PERMANANT MULCHING

- A. Mulching is required immediately after temporary or permanent seeding.
- B. Do not seed areas in excess of that which can be mulched withing 24-hr.
- C. Do not mulch with wind velocities greater than 15 mph.
- D. Be mindful of type and location of erosion control practices. Refer to Drawings before mulching.
- E. Mulching of permanent seed mixes:
 - 1. Do not mulch areas to be covered with rolled erosion control.
 - 2. Mulching an area seeded with a nonnative grass mix:
 - a. Provide Type 1, Type 3, or Type 8 mulch for temporary or permanent seeding.
 - 3. Mulching an area seeded with a native plant mix:

- a. Provide Type 3 mulch for temporary or permanent seeding.
- 4. Application Rate: 2.0-tons/acre.
- 5. Apply mulch by hand or by approved mechanical blowers to provide uniform distribution over all exposed soil at application rate to provide 90% uniform soil coverage. Application shall allow some sunlight to penetrate and air to circulate but also reduce soil and seed erosion and conserve soil moisture.
 - a. If non-uniform distribution occurs, re-mulch areas or remove excess coverage.
- 6. Do not operate mulch-blowing equipment on slopes steeper than 3:1 (H:V) or on slopes that will rut soil surface.
- 7. Disc anchor mulch per MnDOT Specification 2575.3.D.
 - a. Punch the mulch into the soil do a depth from 2 in. – 3 in. space the blades and discs on the anchoring tool no greater than 8 in. apart.

F. Hydromulch:

- 1. Provide hydraulic mulch as substitute for Type 1 or Type 3 mulch at own cost and discretion. Hydromulch shall be applied independently of hydroseeding. Under no circumstances shall hydromulch be applied at the same time as hydroseeding. For hydroseeding specifications, see section 3.05.d.
- 2. Hydromulch is not recommended on sites seeded with native seed mixes.
- 3. Types of Hydromulch
 - a. BFM is preferred, but RFM and SFM are approved alternatives to BFM.
 - b. Provide hydraulically applied mulch at rates according to Table 9219-5.

**Table 9219-5
Hydromulch Application Rates**

Slope Gradient/Condition (H:V)	Rate (lb/ac)	Rate (kg/ha)
≤ 4:1	2,500	2,800
> 4:1 and ≤ 3:1	3,000	3,400
> 3:1 and ≤ 2:1	3,500	3,900
> 2:1 and ≤ 1:1	4,000	4,500
> 1:1	4,500	5,100

- 4. Use hydromulcher capable of continuous agitation action to uniformly distribute slurry over seeded area.
- 5. Prepare slurry mixture on Site by adding water, hydraulic mulch, and other required components to tank simultaneously so that slurry is a homogenous mix.

6. After adding components to tank, agitate complete slurry for minimum of 3-min. to allow uniform mixing.
7. Use flood type nozzle in sweeping motion to form mat of uniform application at specified rate according to Table 9219-5.
8. Reapply slurry mixture at own cost to areas determined to be deficient by Engineer.

G. Winter Mulching

1. Perform frozen ground mulching on bare frozen soils. Place MnDOT 3882, Type 5 and Type 6 mulch materials with no modifications to meet the requirements of frozen ground mulching. Place 3882, Type 1, Type 3, or Type 8 mulch materials with the following modifications to meet frozen ground mulching:
 - a. At temperatures above 20 degrees Fahrenheit, use 3884, Type Natural or Synthetic Tackifier, in lieu of disc anchoring.
 - b. At temperatures below 20 degrees Fahrenheit delay mulching until ground is snow covered and perform snow mulching.
2. Perform snow mulching at any time over the top of snow. No disc anchoring is required. Apply snow mulching prior to or during a snowfall event.

3.09 ROLLED EROSION CONTROL

- A. Erosion control in the form of placing rolled blankets is required immediately after temporary or permanent seeding on slopes.
- B. Do not seed areas in excess of that which can be covered with erosion control within 24-hr.
- C. Acceptable rolled erosion control products vary depending on type of seed mix used. See section 2.01.d of this document.
- D. Refer to Drawings for type and location of rolled erosion control practice before commencement of the Work.
- E. Rolled erosion control blankets
 1. Placement at locations on Drawings is minimum required. Additional rolled erosion control product may be required due to Site conditions, and as approved by the Engineer.
 2. Roll out with netting on top. If rolled erosion control product has netting on two sides, place side with majority of thread stitching on bottom.
 3. Roll out flat and parallel or perpendicular to direction of water flow.
 4. Evenly spread without stretching to allow fibers to directly contact soil over entire area.
 5. Shingle and overlap edges parallel to water flow a minimum of 4-in.

6. Shingle and overlap edges perpendicular to water flow a minimum of 7-in.
7. Staple overlaps on slopes at 1.5-ft. intervals per MnDOT Table 3885-5.
8. At the tops of slopes and at the beginning of each blanket in ditch bottoms, bury the upgrade end of the blanket in a check slot 6 in. wide by 6 in. deep. Insert the blanket end to the full depth of the check slot. Backfill and compact the check slot. For slopes longer than 100 ft., dig a second check slot perpendicular to the slope gradient one-third of the slope length measured from the bottom of the slope. Place the blanket to the full depth of the check slot. Backfill and compact the check slot. Staple blankets with the number of staples in accordance with MnDOT Table 2575-2 or in accordance with manufacturer recommendations.

F. Winter – Erosion Control Blankets

1. Install 3885 erosion control blankets over frozen ground and use the appropriate anchors as shown in MnDOT Table 3885-5.

3.10 MAINTENANCE

A. Furnish maintenance at own cost.

B. Apply water to the seeded areas immediately following installation at a rate sufficient to ensure thorough wetting of the soil to a depth of at least 50 mm (2 inches). Supervise watering operation to prevent run off. Supply all pumps, hoses, pipelines.

1. Repair all areas damaged by water operations. Keep soil surface constantly moist, not wet, until seed is well established.

C. See Section 01 7000 - Execution and Closeout Requirements for additional requirements relating to maintenance service.

D. Sites Seeded with temporary seed mix:

1. Nonnative seed mix: (MnDOT 22-111)
 - a. The establishment period for nonnative grass shall begin immediately after instillation and will continue throughout the growing season until permanent vegetation is seeded.
 - b. Temporary seeding shall be evaluated for establishment cover and plant health each 15 days after establishment begins until the growing season ends, or permanent vegetation is seeded.
 - c. A satisfactory stand of grass plants from the seeding operation shall be 70% coverage uniform in color and leaf texture. Bare spots shall be a maximum of one-half (0.5) square foot.
 - d. Unsatisfactory areas shall be reseeded within seven (7) days during an active growing season.

- e. Immediately reseed and mulch areas that show thin or bare spots, and continue maintenance until grass coverage density requirement is met.
 - f. Weed pressure in temporarily seeded areas shall be reduced by:
 - g. Maintaining grass height to 6 inches via regular mowing
 - h. Applying broadleaf herbicide as directed on applicator instructions.
 - i. Coverage benchmarks and regular maintenance shall be maintained until permanent vegetation is seeded.
2. Cover crop: (MnDOT 21-111, 21-112)
- a. Sites seeded in spring with oats (MnDOT 21-111) must be mowed/harvested once in the fall before interseeding with a permanent native seed mix.
 - 1) Mow crop with mower deck set to 6 inches off the ground in the fall.
 - 2) If interseeding with a permanent seed mix into oats cover crop during fall (September – October), follow guidance in section 9219 3.05.e.
 - 3) If winter seeding with permanent seed mix (November – March), follow winter seeding guidance in section 9219 3.06.d.
 - b. Sites seeded in fall with winter wheat (MnDOT 21-112) must be mowed/harvested once in the spring, regardless of timing of permanent native seed mix addition.
 - 1) If winter seeding with a permanent seed mix (November-March), follow winter seeding guidance in section 9219 3.06.d.
 - 2) In the spring following fall establishment of winter wheat, mow crop with mower deck set to 6 – 8 inches off the ground in the spring. This mowing will not harm the permanent native seed mix.
 - 3) If interseeding with a permanent seed mix into winter wheat cover crop during spring (April – May), follow guidance in section 9219 3.05.e.

E. Sites seeded with a permanent seed mix:

- 1. All seed mixes
 - a. The establishment period shall begin immediately after installation, with the approval of the Engineer and continue for 3 months during the growing season to achieve an establishment condition and appearance satisfactory to the Engineer.
 - b. Seeding shall be evaluated for species and health thirty (30) days after final planting and reevaluated each 15 days during the establishment period. A satisfactory stand of seeded species shall be 70% coverage. Bare spots shall be a maximum of one-half (0.5) square foot.
 - c. Contractor shall be responsible for reseeding areas which do not establish vegetative cover (see section 3.10).

- d. Immediately remove clippings after mowing and trimming.
 - e. Contractor must request, in writing, for review and acceptance by the Engineer or Owner of specific areas. The maintenance period shall continue until written acceptance for a specific area has been issued by the Engineer or Owner.
- 2. Nonnative seed mix
 - a. Control growth of weeds. Apply herbicides per manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
 - 3. Native seed mix
 - a. Control growth of weeds. Mow weedy areas to a height no shorter than 6 inches. Do not apply herbicide.
- F. Acceptance
- 1. The Contractor shall make a written request, for acceptance, two weeks prior to final inspection of the seeding areas. Upon inspection when work is found to not meet the specifications, the Establishment Period shall be extended at no additional cost to the Owner until work has been satisfactorily completed, inspected and accepted.
 - 2. Seeded areas shall have at least 70% coverage in order to be acceptable, bare spots shall be a maximum of one-half (0.5) square foot.

3.11 CLEANING AND PROTECTION

- A. Clean paved areas as necessary with pick-up power broom within 24-hr. following completion of Seeding.
- B. Wash or otherwise clean excess hydroseeding overspray from all areas not intended to receive hydroseeding.

END OF SECTION

**SECTION 33 0513
STRUCTURES AND INTAKES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work to provide all labor, materials, tools, and equipment necessary or incidental to Precast Structures and Assorted Intakes as indicated in the Contract Documents

1.02 DEFINITIONS

- A. ASI = Alternative Side Inlet
- B. ASIRO = Alternative Side Inlet with Riprap
- C. MnDOT = Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]

1.03 PRICE AND PAYMENT PROCEDURES

- A. Precast Structures
 - 1. Precast Structures shall be paid for by the each occurrence and shall include (as incidental) but not be limited to:
 - a. Excavation and backfill of soil
 - b. Granular Bedding Material
 - c. Foundation Pad
 - d. Precast Structure Sections
 - e. Structure Grate
 - f. Prefabricated bends and/or tees to connect pipes
 - g. Sealing of inlets and outlets
 - h. Soil leveling after backfilling
 - i. Site restoration after soil leveling
 - j. Removal or picking of rocks after site restoration
 - 2. Drop Intake
 - a. Drop Intake shall be paid by the each occurrence and shall include (as incidental) but not limited to:
 - 1) Excavation and backfill of soil
 - 2) Granular Bedding and Encasement Material

- 3) Agricultural Tile
- 4) Prefabricated bends and/or tees
- 5) Soil leveling after backfilling
- 6) Site restoration after soil leveling
- 7) Removal or picking of rocks after site restoration
- 8) Adjustments after settlement

3. Blind Rock Intakes

- a. Blind Rock Intake shall be paid by the each occurrence and shall include (as incidental) but not limited to:

- 1) Excavation and backfill of soil
- 2) Granular Bedding and Encasement Material
- 3) Agricultural Tile
- 4) Prefabricated bends and/or tees
- 5) Soil leveling after backfilling
- 6) Site restoration after soil leveling
- 7) Removal or picking of rocks after site restoration
- 8) After Televising of main tile
 - (a) Excavation and backfill of soil
 - (b) Tile Cap
 - (c) Rock and fabric

4. Alternative Side Inlet - Riser Assembly

- a. Alternate Side Inlets Riser Assembly shall be paid for by each occurrence and shall include (as incidental) but not limited to;

- 1) Excavation and backfill of soil
- 2) Granular Bedding and Encasement Material
- 3) Agricultural tile wrapped in fabric
- 4) Inlet structure
- 5) Prefabricated bends and/or tees
- 6) Soil leveling after backfilling

- 7) Site restoration after soil leveling
 - 8) Removal or picking of rocks after site restoration
5. Alternative Side Inlet - Outlet Assembly
- a. Alternate Side Inlet Outlet Assembly shall be paid for by each occurrence and shall include (as incidental) but not limited to;
 - 1) Excavation and backfill of soil
 - 2) Granular Bedding and Encasement Material
 - 3) Agricultural tile
 - 4) Installation of Clay Plug
 - 5) Riprap at outlet of tile
 - 6) Regrading of ditch bank
 - 7) Prefabricated bends and/or tees
 - 8) Soil leveling after backfilling
 - 9) Site restoration after soil leveling
 - 10) Seeding
 - 11) Removal or picking of rocks after site restoration
6. Water Quality Intakes
- a. Water Quality Intake shall be paid by the each occurrence and shall include (as incidental) but not limited to:
 - 1) Excavation and backfill of soil
 - 2) Granular Bedding and Encasement Material
 - 3) 20 linear feet of perforated agricultural tile
 - 4) Inlet structure
 - 5) Prefabricated bends and/or tees
 - 6) Soil leveling after backfilling
 - 7) Site restoration after soil leveling
 - 8) Removal or picking of rocks after site restoration
7. Riprap

- a. Riprap shall be paid by the Cubic Yard and shall include (as incidental) but not limited to:
 - 1) Excavation of soil
 - 2) Hauling and placement of riprap
 - 3) Geotextile fabric

- 8. Remove Drop Intake
 - a. Remove Drop Intake shall be paid by the each occurrence and shall include (as incidental) but not limited to:
 - 1) Excavation and backfill of soil
 - 2) Bulkhead or repair of existing tile
 - 3) Granular Bedding and Encasement Material
 - 4) Agricultural Tile
 - 5) Prefabricated bends and/or tees
 - 6) Soil leveling after backfilling
 - 7) Site restoration after soil leveling
 - 8) Removal or picking of rocks after site restoration

- 9. Cap Drop Intake
 - a. Cap Drop Intake shall be paid by the each occurrence and shall include (as incidental) but not limited to:
 - 1) Excavation and backfill of soil
 - 2) Cutting and disposal of tile segment
 - 3) Tile cap or cover of cut tile
 - 4) Soil leveling after backfilling
 - 5) Site restoration after soil leveling
 - 6) Removal or picking of rocks after site restoration
 - 7) Adjustments after settlement

- 10. Bar Guard Assembly
 - a. Bar Guard Assembly shall be paid by the each occurrence and shall include (as incidental) but not limited to:
 - 1) Cutting and disposal of tile segment

- 2) Heavy Duty Trash Guard
- 3) Anti-Vortex Plate

1.04 REFERENCE STANDARDS

- A. Section 31 3700 – Riprap
- B. Section 33 4510 – Agricultural Drain Tile
- C. Section 31 0011 – Site Restoration
- D. MnDOT Section 2506 - Manholes and Catch Basins.
- E. MnDOT Standard Plates.
- F. City Engineer's Association of Minnesota (CEAM) Specification No. 2621 shall apply to construction and installation of manholes and covers, except as modified herein.
- G. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International.
- H. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
- I. ASTM A123/A 23M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- J. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- K. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
- L. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
- M. ASTM C1821 – Installation of Underground Circular Precast Concrete Manhole Structures
- N. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells.
- O. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Manufacturer's Certification: Certificate of compliance for all materials, supplies, and equipment provided.
- C. Product Data: Provide data on castings and covers, component construction, features, configuration, and dimensions.

- D. Shop Drawings: Indicate structure locations, elevations, piping sizes and elevations of penetrations.

1.06 DELIVER, STORAGE & HANDLING

- A. Deliver and store fittings and appurtenances in shipping containers with labeling in place.
- B. Store pipe and structures on a clean and stable surface. Ensure pipe remains free of material and debris.
- C. Store and handle pipe, structures and appurtenances as recommended by manufacturer to prevent scratching, cutting and/or gouging.

1.07 QUALITY ASSURANCE

- A. Manufacturer: Company certified in manufacturing products meeting MnDOT specifications.
- B. Manufacturer: Company specializing in manufacturing products specified in this section with minimum 3-years documented experience.

1.08 SITE CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or applicable building code, whichever is more stringent.
- B. Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

1.09 TOLERANCE

- A. Contractor shall perform the Work within the following tolerances unless approved by the Engineer;
 - 1. Structure Elevation = 0.10 feet
 - 2. Drop Intake = 0.10 feet

1.10 WARRANTY

- A. Contractor shall provide a three year warranty for any defects in material or workmanship, covering replacement of pipe and freight to site according to MN Statue 103E.501 Subd. 6.
 - 1. The warranty period shall not start until final completion of this Contract.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Precast Concrete Storm Drainage Structures:
 - 1. Storm drainage structures shall conform to the MnDOT Standard Design as indicated on the plan set.

2. Reinforced polypropylene plastic steps shall not be furnished for all storm drainage manholes.
 3. Structures shall be furnished with holes for tile connects in accordance with the construction documents.
 4. In field holes may be cored with an appropriate tool, as determined by the Engineer. Jack hammering holes shall not be allowed.
- B. Grout
1. Grout shall conform to MnDOT requirements.
- C. Nyloplast Storm Sewer Structures
1. Nyloplast structures shall be of the size and type as indicated on the plans.
- D. Agri Drain
1. Agri Drain shall be of the size and type as shown on the plans.
- E. Agricultural Tile
1. Agricultural Tile shall be in conformance with Section 33 4510 AGRICULTURAL DRAIN TILE.
- F. Castings & Grates:
1. All casting assemblies shall meet the certification requirements of MnDOT and be manufactured by a MnDOT approved source.
 2. Storm drainage manhole castings shall be Haala Grates or approved equal and shall be zync coated for protection.
- G. Adjusting Rings:
1. Concrete adjusting rings meeting MnDOT specifications shall be used.
 2. HDPE adjusting rings must be installed in conformance with manufacturer's recommendation
- H. External Ring Seal:
1. All structures shall be provided with external ring seals as indicated in the drawings.
- I. Internal Link Seal:
1. All sanitary manholes shall be provided with internal link seals as indicated in the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of Work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for manholes is correct.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 PRE-CAST STRUCTURES

- A. Excavation and Trench Preparation:
 - 1. Interference of Underground Structures: If an existing utility is shown on the plan set and no bid item addresses removing and restoring or working around the utility, the Contractor must remove and restore or protect the utility. This work shall be considered incidental to the manhole installation.
 - 2. The Contractor shall install and operate a dewatering system to maintain all trenches free of water wherever necessary. The Contractor shall be responsible for remediation of any damage to adjacent structures or buildings caused by the dewatering operations. The Contractor shall make his own subsurface investigations and determine what dewatering methods to utilize to prevent such damage.
- B. Existing inverts shall be protected during construction. If debris enters the system, it shall be the responsibility of the Contractor to clean the sewer.
 - 1. Existing System Connections:
 - a. When connecting to an existing pipe or manhole in the sanitary sewer/storm drainage system, the Contractor must expose and verify the elevation of the connection point prior to installing any pipe or manhole accessories. If the existing elevation does not match that shown on the plan set, the Contractor shall notify the Engineer, at which time the Engineer may adjust the proposed grades. Should the Contractor verify the depth and location of existing connection pipes, no additional compensation or time extension will be granted in the event of complications.
 - b. When connecting to an existing sanitary manhole, an approved watertight connection shall be made.
- C. A 12 inches of 1 ½ inch clean crushed rock base shall be placed under all structures
- D. Place concrete base pad, trowel top surface level.
- E. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
- F. Form and place manhole cylinder plumb and level, to correct dimensions and elevations. As work progresses, build in fabricated metal items.

- G. Cut and fit for pipe.
- H. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.
- I. Set cover frames and covers level without tipping, to correct elevations.
- J. Coordinate with other sections of work to provide correct size, shape, and location.
- K. Internal link seals shall be installed according to manufacturer's recommendations on all sanitary sewer manholes.

3.04 CASTING ADJUSTMENT

- A. Castings shall be raised to match grade with surface.
- B. Unless noted otherwise in the plans, if castings are in pavement that will have several lifts applied, the castings shall be raised with each subsequent lift.
- C. Up to one insert is allowable for adjustment
 - 1. Install insert per manufacturer's recommendations.

3.05 MANHOLE ADJUSTMENT

- A. Manholes requiring adjustment shall require a minimum of 2 adjusting rings and a maximum of 6 adjusting rings.
- B. All applicable sections of this specification shall apply to the adjustment of the manhole or catch basin.
- C. Up to one insert is allowable for adjustment.
 - 1. Install insert per manufacturer's recommendations.

3.06 DROP INTAKE

- A. Drop intakes shall be placed at a maximum distance of 1,000 feet apart and at all property boundaries, unless approved by the Engineer.
 - 1. When located at property boundary, intake must be adjusted to match field boundary in lieu of construction drawings.
- B. Contractor shall construct drop intake in conformance with the construction drawings.
- C. All drainage grates (bar guards) shall be conform to the construction drawings for space dimensions and thickness of bars
- D. Where intakes will not take surface flow, Contractor may substitute a solid cap in lieu of drainage grate.
 - 1. Intakes may be cut below grade and capped per property owners request, after final televising, and must be approved by the Engineer.

- E. Where specified on the construction drawings, or approved by the Engineer, Blind Rock Intakes may be used in lieu of a Drop Intake.
 - 1. Blind Rock intakes must be left to surface elevation until final televising is completed and accepted, then intakes shall be cut below ground elevation, in accordance with the construction drawings.

3.07 REMOVAL OF DROP INTAKE

- A. Drop intakes that should be removed shall be excavated and disposed of properly.
- B. Fill area where drop intake was located with fill material and compact to achieve a compaction similar to the surrounding soil.

3.08 ALTERNATIVE SIDE INLET

- A. Alternative Side Inlets shall be placed at the edge of the 16.5-foot buffer strip unless approved by the Engineer.
- B. Alternative Side Inlet and Inlet structure shall conform to the construction drawings
- C. Riprap may be used in accordance with the construction documents and shall be placed so that the flow of the ditch is not impeded.

3.09 WATER QUALITY INLET

- A. Water Quality Inlets shall conform to the construction drawings and shall be placed in the low spot of the roadway ditch.

3.10 EXISTING STRUCTURE OR INTAKE ADJUSTMENT

- A. Existing structure or intake adjustment shall consist of the following:
 - 1. Removal of the existing structure casting and rings.
 - 2. Removal and replacement of the required adjusted rings as specified in the previous paragraph, 'Manhole Adjustment'.
 - 3. Replacement of the existing casting or installation of a new casting or cap as identified in the drawings.
 - 4. Installation of an external manhole seal to be placed around the casting and all adjusting rings. Installation shall be in accordance with the manufacturer's instructions.
 - 5. Backfill/construction of the proposed pavement section.
 - 6. Up to one insert is allowable for adjustment.

3.11 SITE RESTORATION

- A. Refer to Specification Section 31 0011 – SITE RESTORATION

END OF SECTION

**SECTION 33 4510
AGRICULTURAL DRAIN TILE**

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Standard specifications for materials of underground piping in agricultural drain tile applications. Specifications provided in this section shall be from the latest revision of the published standard.
- B. Standard practices for installation of underground piping in agricultural drain tile applications. Practices for installation in this section shall be from the latest revision of the published standard.

1.02 DEFINITIONS

- A. Granular Foundation: Material placed 6 inches or greater below the bottom of the pipe grade as recommended by Engineer or soils testing laboratory as replacement for unsuitable or unstable soils, to achieve adequate foundation support.
- B. Granular Bedding: Material placed below pipe, prior to pipe installation, to facilitate proper shaping and to achieve uniform pipe support.
- C. Granular Haunch: Material placed from the spring line of the pipe to the Granular Bedding zone.
- D. Granular Encasement: Material placed from an elevation 6 inches above the top of pipe to Granular Haunch, after pipe installation, for protection of pipe and to assure proper filling of voids or thorough consolidation of backfill.
- E. Backfill: Placed from an elevation 6 inches above top of pipe to top of trench, before topsoil placement is to be replaced.

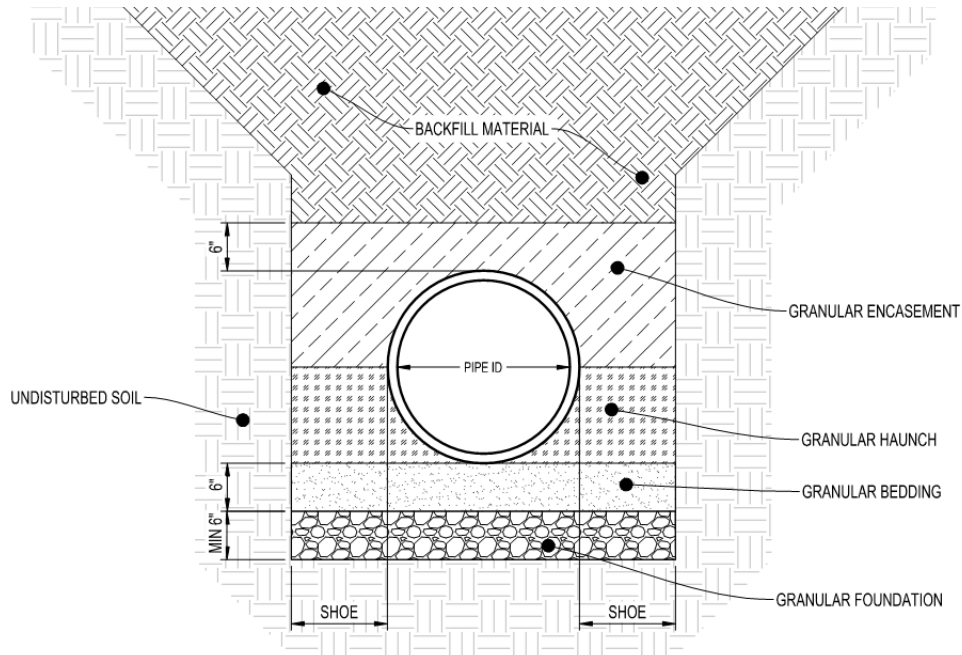


FIGURE 4510-1
AGRICULTURAL PIPE ZONE
 NTS

- F. MnDOT: Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]
- G. Water Tight Gasketed Fitting (WTGF): A pipe service connection fitting that is used in lieu of a molded tee
- H. HDPE: Refers to Dual wall High Density Polyethylen agricultural pipe
- I. PE: Refers to single wall polyethylene agricultural pipe
- J. PP or HP: Refers to Dual wall Polypropylene agricultural
- K. Shoe: width outside of pipe to trench wall to perform adequate compaction of granular material (See Figure 4510-1)

1.03 PRICE AND PAYMENT PROCEDURES

- A. Payment shall be made on measured installed quantities, by the Engineer, constructed for the work.
- B. Payment will be made at the unit prices bid for the work, shall constitute full and complete payment for the entire project including materials, labor, and all incidental items necessary for the complete and successful prosecution of the work in accordance with the intent of the drawings and specifications. Refer to Section 00 4322 - Unit Prices Form, for additional unit price requirements.

C. Where authorized in writing by the Engineer and approved by the Owner, payment for work not included in the Bid Security Form or the Plans and Specifications, and for which no unit price has been established, will be made as provided under the General Conditions.

D. Tile Investigation

1. Tile Investigation shall be paid by the hour as measured by the Engineer and shall include (as incidental) but not be limited to
 - a. Location marker
 - b. Excavation and backfill of soil
 - c. Soil leveling after backfilling
 - d. Site Restoration after soil leveling
 - e. Repair tile, if damaged

E. Agricultural Drain Tile

1. Payment for installed tile shall be 90% until the Engineer has performed final televising. The 10% to be released if tile is in accordance to tile specifications, described below.
2. Agricultural Drain Tile shall be paid for by the linear foot as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. Soil leveling after backfilling
 - c. Site Restoration after soil leveling
 - d. Temporary seeding
 - e. Removal of existing tile unless specified on the plans or approved by the Engineer
 - 1) I.E. Proposed tile alignment is within the existing tile alignment
 - f. Removal or picking of rocks after site restoration.
 - g. Prefabricated bends and/or tees
 - h. Granular Bedding, Haunch and Encasement Materials

F. Clay plugs

1. Payment for clay plug shall be incidental to tile outlet construction.

G. Granular Foundation Material

1. All Granular Foundation Material shall be paid by the cubic yard as measured and approved by the Engineer.

- a. The relative density should be provide for accurate conversion from Tons to Cubic Yards (CY). If not provided, the relative density shall be 120 pounds per cubic foot (PCF).

- 1) 1 CY = 1.62 Tons

H. Granular Bedding, Granular Haunch and Granular Encasement Materials

- 1. All Granular Bedding, Granular Haunch and Granular Encasement materials are considered incidental to the placing of agricultural drain tile.

I. Connect Existing Tile

- 1. Connect Existing tile shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. Single wall polyethylene pipe
 - c. All necessary pipe fittings and fabric
 - d. All necessary Granular Material

J. Cross Connect Tile

- 1. Cross Connection to tile shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. 40 linear feet of agricultural drain tile
 - 1) Additional footage for connection shall be paid for as appropriate agricultural drain tile size.
 - c. All necessary pipe fittings and fabric
 - d. All necessary Granular Material

K. Deep Tile Connection

- 1. Deep Tile Connection shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. Perforated dual wall pipe
 - c. All necessary pipe fittings and fabric
 - d. All necessary Granular Material

L. Private Tiling (Perforate Single Wall Tile)

1. Private Tiling shall be paid for by the linear footage as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. Perforated Single wall pipe
 - c. All necessary pipe fittings and fabric
 - d. All necessary Granular Material

M. Bulkhead Existing Tile

1. Bulkhead Existing Tile shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of soil
 - b. Break and remove existing tile
 - c. All necessary watertight material to plug the tile or drain tile cap to prevent water from entering or exiting.

1.04 REFERENCE SPECIFICATIONS

- A. Section 310011 - SITE RESTORATION
- B. Section 31 2500 - EROSION AND SEDIMENT CONTROL
- C. Section 32 9219 - SEEDING
- D. Section 33 0523 - TRENCHLESS PIPE INSTALLATION
- E. Section 34 0100 - MAINTENANCE AND RESTORATION ROADWAYS
- F. MnDOT Section 2501 - Pipe Culverts
- G. MnDOT Section 3138 - Aggregate for Surface and Base Courses
- H. MnDOT Section 3149 - Granular Materials
- I. MnDOT Standard Plates
- J. ASTM C76 - Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
- K. ASTM C1479 – Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
- L. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
- M. ASTM D1784 - Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

- N. ASTM D2321 - Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- O. ASTM D3034 - Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- P. ASTM D3212 - Joints for Drainage and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- Q. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- R. ASTM F667 - 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
- S. ASTM F2306 - 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
- T. ASTM F2648 - 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications
- U. ASTM F2764 - 6 to 60 in. [150 to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
- V. ASTM F2881 - 12 to 60 inch [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications
- W. AASHTO M252 - Corrugated Polyethylene Drainage Pipe [75- to 250-mm (3- to 10-in.) Diameter]
- X. AASHTO M294 – Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- Y. AASHTO M330 – Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- Z. AASHTO Section 12 – Buried Structures and Tunnel Liners

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe manufacturer, material and sizes for the Work.

1.06 DELIVERY, STORAGE & HANDLING

- A. Deliver and store fittings and appurtenances in shipping containers with labeling in place.
- B. Store pipe on a clean and stable surface. Ensure pipe remains free of material and debris.
- C. Store and handle pipe and appurtenances as recommended by manufacturer to prevent scratching, cutting and/or gouging.

1.07 QUALITY ASSURANCE

- A. The materials used in this work shall be new and conform to the specifications for class, kind and size of material specified below, or as specified hereinafter.

- B. Materials at delivery point shall be inspected by the Contractor for loss or damage in transit. It shall be Contractor's responsibility to repair or replace damaged items in accordance with the manufacturer's instructions.
- C. The Engineer may reject any damage pipe before installation. If Contractor installs rejected pipe from the Engineer, it shall be the Contractors responsibility to repair the pipe or provide new pipe meeting specifications.

1.08 SITE CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data but locations may vary and cannot be guaranteed. The exact location shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing utilities.
- B. Additional underground utilities may exist that are not shown on the plans and shall be treated as if they are shown on the plans unless specified by the Engineer.
- C. Contractor shall provide for protection, temporary removal and replacement, or relocation of said obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.

1.09 TOLERANCE

- A. Contractor shall perform the Work within the following tolerances unless approved by the Engineer;
 - 1. Tile Installation Elevation = 0.10 feet
 - 2. Pipe gap Joints = 1-inch
 - 3. Deflection = 5.0%

1.10 WARRANTY

- A. Contractor shall provide a three year warranty for any defects in material or workmanship, covering replacement of pipe and freight to site according to MN Statue 103E.501 Subd. 6.
 - 1. The warranty period shall not start until final payment and acceptance of this Contract.

PART 2: PRODUCTS

2.01 MATERIALS

- A. REINFORCED CONCRETE PIPE (RCP)
 - 1. RCP shall conform to the requirements of the ASTM C76 and the Class as indicated on the drawings or recommended by the manufacturer.
 - 2. Concrete pipe joints shall have a minimum of one line of bitumastic wrap.

3. Reinforced concrete pipe shall conform to MnDOT Standard Plate 3006G, current edition.

B. POLYVINYL CHLORIDE (PVC) PIPE

1. All PVC sewer pipes and fittings shall be minimum SDR-35 conforming to ASTM D3034. Joints shall be elastomeric gasketed must conform to Section 2.01.F of this specification.

C. CORRUGATED POLYETHYLENE PIPE (PE)

1. All PE pipe and fittings shall conform to the applicable specification for the pipe size and specific installation. Single wall (Type C or CP) shall conform to ASTM F667, ASTM F2648, AASHTO M252 or AASHTO M294.
2. Joints for pipe connections shall be internal or external snap or split coupler covering at least two full corrugations on each end of the pipe.
3. All bends and fittings must conform to ASTM F667, AASHTO M252 or AASHTO M294, but do not need to be gasketed.
4. All PE pipe classes shall be determined and provided by manufacturer recommendations in accordance with AASHTO Section 12. Specific class of pipe shall be shown on the plans or specified in the Project Manual.

D. CORRUGATED HIGH DENSITY POLYETHYLENE PIPE (HDPE)

1. All PE pipe and fittings shall conform to the applicable specification for the pipe size and specific installation. All smooth interior, dual-wall (Type S or SP) shall conform to ASTM F2306, ASTM F2648 or AASHTO M294 with all pipe sizes having gasketed ends. Joints for pipe connections shall be elastomeric gasketed and must conform to Section 2.01.F of this specification.
2. All bends and fittings must conform to ASTM F2306, ASTM F2648 or AASHTO M294, but do not need to be gasketed.
3. All HDPE pipe classes shall be determined and provided by manufacturer recommendations in accordance with AASHTO Section 12. Specific class of pipe shall be shown on the plans or specified in the Project Manual.

E. CORRUGATED POLYPROPYLENE PIPE (PP)

1. All PP pipe and fittings shall conform to the applicable specification for the pipe size and specific installation. All smooth interior shall conform to ASTM F2881, or AASHTO M330 with all pipe sizes having gasketed ends and must conform to Section 2.01.F of this specification.
2. All bends and fittings must conform to ASTM F2881 or AASHTO M330 but do not need to be gasketed.

F. Water Tight Gasketed Fittings (WTGF)

1. All fittings shall be an Inserta-Tee or QwikSeal or approved equal by the Engineer.

G. GASKETS

1. All gaskets shall be watertight and must conform to ASTM D3212 and ASTM F477.

H. GRANULAR MATERIALS

1. Granular materials furnished for foundation, bedding, encasement, backfill, or other purposes as may be specified shall consist of any natural or synthetic mineral aggregate such as sand, gravel, crushed rock, crushed stone, or slag, that shall be so graded as to meet the gradation requirements specified herein of each particular use. Suitable materials shall be subject to the approval of the Engineer.

- a. At no time shall clay material be utilized as granular foundation, granular bedding or granular encasement.
- b. In each case below, unless otherwise indicated, the lower limits of any particular zone shall be the top surface of the next lower course as constructed. The upper limits of each zone are established to define variable needs for material gradation and sequence of construction and other conditions. The material use and zone designations defined shall only serve to fulfill the objectives and shall not be construed to restrict the use of any particular material in other zones where the gradations require.

2. GRANULAR FOUNDATION ZONE

- a. All Granular Foundation shall conform to ASTM Class I. See Table 4510-1 below.

3. GRANULAR BEDDING, HAUNCH AND ENCASUREMENT ZONES

- a. All Granular Bedding, Haunch and Encasement material shall conform to ASTM Class II. See Table 4510-1 below.
 - 1) If ASTM Class II Material is not locally available, Contractor shall submit gradation of local material source for approval by the Engineer.

Table 4510 - 1
Granular Material Gradations
(Percent Passing)

Sieve Size	Pipe Zone	
	Foundation	Bedding & Haunch & Encasement
	ASTM CLASS I (CRUSHED ROCK, ANGULAR)	ASTM CLASS II (CLEAN, COARSE- GRAINED)
2 in	-	-
1 1/2 in	100	100
1 in	-	-
3/4 in	-	-
3/8 in	< 25	-
No. 4	≤ 15	-
No. 10	-	-
No. 40	-	-
No. 200	< 12	<12

I. SELECT NATIVE MATERIAL

1. All Select Native material shall have a gradation of less than 30% passing the #200 sieve.
2. Select Native material may consist of excavated material from the trench.

PART 3: EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall examine the project site, make determinations concerning soil and groundwater conditions, and review requirements of the plans and specifications related to construction of the work. Contractor shall provide the equipment and related appliances necessary to perform the work in accordance with the plan for agricultural drain tile construction.
- B. Prior to crossing any public road, the Contractor shall notify the appropriate road authority at least 15 days in advance and shall be responsible for the utility locate.

- C. The Contractor shall work in a 2,500 linear foot section to section basis for all Drain Tile work including, but not limited to Tile Installation, Spoil Leveling, Site Restoration, Tile Connections and Intake installation. Immediately after work has been completed through a section, the Contractor must seed all disturbed Right-of-Ways, or other applicable areas within fourteen days. The Engineer reserves the right to cease other operations and/or hold payment until compliance has been met and all erosion control and site cleanup has been completed; including but not limited to restoring tillable acres.

3.02 TILE INVESTIGATION

- A. The Contractor shall notify the Engineer at least 48 hours prior to the start of Tile Investigation and shall not begin investigation until the Engineer is onsite or notified that Investigation has begun.
- B. The Contractor shall locate, mark and record depth of any existing tile, to the best of their ability, prior to the 2,500 linear foot section of Work in progress.
- C. The Engineer will record the marked locations and determine, if any, Plan Adjustments should be implemented for the proposed alignment.

3.03 IN-FIELD ADJUSTMENTS

- A. The Engineer may adjust the plans after tile investigation is complete as outlined in Article 11.04 (Field Orders) of the General Conditions. The Engineer will attempt to reuse any bends and fittings that were originally planned.

3.04 EXCAVATION

- A. Excavation of every description and of whatever materials encountered shall be made to the alignment and depth shown on the drawings or as directed by the Engineer. Excavation shall be made by open cut. Sides of trenches shall be kept as nearly vertical as possible but in conformance with OSHA standards and the trench shall be braced, sheeted and drained so that workers may work safely and efficiently. The trenches shall be sufficiently straight between designated angle points to permit the pipe to be laid true to line in the approximate center of the trench.
- B. The trench width may vary with and depend upon the depth of trench, the diameter of pipe to be laid and the nature of the material to be excavated; but in any case shall be of ample width to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted properly.
- C. The pipe shall be laid upon soil cut true and even, so that the barrel of the pipe will have a bearing for at least one-fourth of the circumference and its full length. Bell holes shall be excavated to insure the pipe resting for its entire length upon the bottom of the trench. See Paragraph "3.06 PIPE BEDDING AND ENCASEMENT" for bedding requirements.
- D. Whenever wet, soft or unstable soil, incapable of properly supporting the pipe, manholes or other structures encountered in the trench, a further depth and/or width shall be excavated and refilled to trench bottom grade with granular foundation material thoroughly compacted to assure a firm foundation.

1. Contractor shall notify Engineer of area and submit all load tickets for the granular foundation material used. If no tickets are submitted, payment will not be made.

3.05 SHORING & SHEETING

- A. Shoring, sheeting, bracing, etc., shall be put in place and maintained by the Contractor at their own expense, as may be required to support the side of excavation and to prevent any movement which may in any way endanger personnel or injure or delay the work or endanger adjacent buildings or other structures. Where sheeting and bracing are used, the trench width shall be increased accordingly. The sheeting and bracing shall be removed in such manner as not to endanger the constructed pipe or other structures, utilities or property, whether public or private.
- B. The Contractor shall be responsible to be familiar with local, state, and federal regulations relating to this type of work and he shall assume the responsibility for compliance therewith.

3.06 PIPE INSTALLATION METHODS

- A. Pile installation method shall consist of the following, unless approved by the Engineer;
 1. Spoon Bottom Trench (S)
 2. Spoon Bottom Trench with uncompacted Foundation Material (SF)
 3. Flat Bottom Trench (F)
 4. Flat Bottom Trench with uncompacted Foundation Material (FF)
 5. Flat Bottom Trench with compacted Foundation Encasement (FE)
- B. Contractor may choose any of the installation methods stated above that correlates with the appropriate fill height consideration, as stated in Table 4510-2

Table 4510 - 2
Fill Height Installations

Pipe Material	Fill Height		
	0 to 15 Feet	15 to 25 Feet	25 to 50 Feet
RCP**	S, F	F	F
HDPE	S*,F	SF*,FF	-
PE	S	-	-
PP	S, F	F	FE*

S = Spoon Bottom Trench
 SF = Spoon Bottom Trench with uncompacted Foundation material
 F = Flat Bottom Trench
 FF = Flat Bottom Trench with uncompacted Foundation material
 FE = Flat Bottom Trench with compacted Foundation Encasement
 * = Preferred
 ** = Class of material is variable (See Manufacturer Recommendation)

3.07 GRANULAR FOUNDATION

- A. Contractor may use granular foundation material in the absence of a stable bottom of the trench. The Engineer must be notified prior to usage of material to be properly paid.
 - 1. If the Engineer is not notified, the Contractor shall not be paid for the material used during the time the Engineer is not notified.
- B. Granular Foundation Material shall be calculated by the Engineer based on the trench dimensions and thickness of material, excluding the Granular Bedding zone.

3.08 PIPE BEDDING AND ENCASEMENT

- A. All pipes shall be bedded and encased as indicated on the drawings, details, and referenced herein or approved by the Engineer;
- B. In the event that natural, suitable, granular material is not encountered during normal excavation of the trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the pipe as required, the Contractor shall provide and place such approved material as required. If suitable excess excavation is available from other area of the project, Contractor may be required to install such material in the trench.
- C. Soils consisting of clay including but not limited to clayey gravel, clays and silts are not permissible for use as Bedding, Encasement or Foundation materials.
- D. Spoon Installation Method

1. Reinforced Concrete Pipe
 - a. Where no specific bedding requirement is called out, use Class C bedding. Concrete pipe shall be laid with the groove (or bell) ends up grade; the tongue (or spigot) end shall be firmly inserted in the groove.
 - b. Class C Bedding is laid with ordinary care in a earth foundation shaped to fit the lower 50 percent breadth of the pipe. The remainder of the pipe is surrounded to a height of at least 6 inches above its top by Select Native Material.
 - c. The class of reinforced concrete pipe shall be dependent on the Type of installation method, as specified in the American Concrete Pipe Association Fill Height Tables.
2. Corrugated PE
 - a. In accordance with ASTM F449
 - 1) Spoon dimensions shall be in accordance with Table 4510-3 or the pipe manufacturer, whichever is more tolerant.
 - 2) Gap between native soil and pipe shall not exceed 1-inch.
 - 3) No granular bedding material is required for spoon installation method as long as the gap between trench sidewall and pipe does not exceed 1-inch.
 - 4) Granular Encasement material shall be used from springline of pipe to 6-inches above top of pipe.
3. Corrugated HDPE
 - a. In accordance with ASTM F449
 - 1) Spoon dimensions shall be in accordance with Table 4510-3 or the pipe manufacturer, whichever is more tolerant.
 - 2) No granular bedding material is required for spoon installation method as long as the gap between trench sidewall and pipe does not exceed 1-inch.
 - 3) Granular Encasement material shall be compacted in 6 inch lifts from springline of the pipe to 6 inches above the top of the pipe to achieve a compaction of at least 95% SPD or manufacturer's recommendation, whichever is greater.
4. Corrugated Polypropylene Pipe (PP)
 - a. In accordance with ASTM F449
 - 1) Spoon dimensions shall be in accordance with Table 4510-3 or the pipe manufacturer, whichever is more tolerant.
 - 2) Granular Bedding material is not required for spoon installation method as long as the gap between trench sidewall and pipe does not exceed 1-inch.

- 3) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe to achieve a compaction of at least 95% SPD or manufacturer's recommendation, whichever is greater.
- 4) When fill height exceeds 16-feet, installation method shall switch to flat bottom.

Table 4510 - 3
Spoon Dimensions

Nominal Pipe ID (in)	Nominal Pipe OD (in)	Spoon Width (in)	Spoon Depth (in)
4	4.8	-	-
6	6.9	-	-
8	9.1	9.5	4.8
10	11.4	13.5	5.7
12	14.5	16.5	7.3
15	18	19.6	8.8
18	22	23.3	10.6
24	28	29.9	14
30	36	37.2	17.6
36	42	43.2	20.6
42	48	49.8	23.9
48	54	55.7	26.9
60	67	68.6	33.3

E. Spoon Installation Method with uncompacted Foundation material

1. Corrugated HDPE

a. In accordance with ASTM F449

- 1) Spoon dimensions shall be in accordance with Table 4510-3 or the pipe manufacturer, whichever is more tolerant.
- 2) No granular bedding material is required for spoon installation method as long as the gap between trench sidewall and pipe does not exceed 1-inch
- 3) Granular foundation material shall be placed from the springline of the pipe to 6-inches above the pipe.

F. Flat Bottom Installation Method

1. Reinforced Concrete Pipe

- a. Where no specific bedding requirement is called out, use Type II bedding. Concrete pipe shall be laid with the groove (or bell) ends up grade; the tongue (or

spigot) end shall be firmly inserted in the groove.

- b. Type II Bedding is defined as 6 inches of Granular Bedding material below the pipe with Granular Bedding material compacted in 6 inch lifts to the springline of the pipe.
 - c. Select Native Material will be an acceptable backfill above the springline of the pipe.
 - d. The class of reinforced concrete pipe shall be dependent on the Type of installation method, as specified in the American Concrete Pipe Association Fill Height Tables.
2. Polyvinyl Chloride (PVC)
- a. In accordance with ASTM D2321, using Class I or II bedding material compacted to 95% Standard Proctor Density.
3. Corrugated PE
- a. In accordance with ASTM F449.
 - 1) Trench dimensions shall be in accordance with Table 4510-4 or the pipe manufacturer, whichever is more tolerant
 - 2) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe.
4. Corrugated HDPE
- a. In accordance with ASTM F449.
 - 1) Trench dimensions shall be in accordance with Table 4510-4 or the pipe manufacturer, whichever is more tolerant
 - 2) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe to achieve a compaction of at least 95% SPD or manufacturer's recommendation, whichever is greater.
 - 3) When fill height exceeds 15-feet, Granular Foundation material shall be used instead of Granular Bedding and/or Encasement.
 - (a) Contractor may change pipe material to Polypropylene with Granular Encasement material, at no additional Cost.
5. Corrugated Polypropylene Pipe (PP)
- a. In accordance with ASTM F449.
 - 1) Trench dimensions shall be in accordance with Table 4510-4 or the pipe manufacturer, whichever is more tolerant

- 2) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe to achieve a compaction of at least 95% SPD or manufacturer's recommendation, whichever is greater.

G. Flat Bottom Installation with uncompacted foundation encasement

1. Corrugated HDPE
 - a. In accordance with ASTM F449.
 - 1) Trench dimensions shall be in accordance with Table 4510-4 or the pipe manufacturer, whichever is more tolerant
 - 2) Granular foundation material shall be placed from the bottom of the pipe to 6-inches above the top of the pipe.

H. Flat Bottom Installation with compacted Foundation Encasement

1. Reinforced Concrete Pipe (RCP)
 - a. Where no specific bedding requirement is called out, use Type II bedding. Concrete pipe shall be laid with the groove (or bell) ends up grade; the tongue (or spigot) end shall be firmly inserted in the groove.
 - b. Type II Bedding is defined as 6 inches of Granular Bedding material below the pipe with Granular Bedding material compacted in 6 inch lifts to the springline of the pipe.
 - c. Select Native Material will be an acceptable backfill above the springline of the pipe.
 - d. The class of reinforced concrete pipe shall be dependent on the Type of installation method, as specified in the American Concrete Pipe Association Fill Height Tables.
2. Corrugated Polypropylene (PP)
 - a. In accordance with ASTM F449.
 - 1) Trench dimensions shall be in accordance with Table 4510-4 or the pipe manufacturer, whichever is more tolerant.
 - 2) Granular Foundation Material shall be compacted in 6-inch lifts from the bottom of the pipe to 6 inches above the top of the pipe to achieve a compaction of at least 95% SPD or manufacturer's recommendation, whichever is greater.
 - (a) Granular Encasement material shall not be used, unless approved by the Engineer.

Table 4510 - 4
Flat Bottom Trench Dimensions

Nominal Pipe ID (in)	Nominal Pipe OD (in)	Minimum Trench Width (in)	Minimum Depth of Granular Bedding (in)
4	4.8	21	6
6	6.9	23	6
8	9.1	26	6
10	11.4	28	6
12	14.5	30	6
15	18	34	6
18	22	39	6
24	28	48	6
30	36	56	6
36	42	64	6
42	48	72	6
48	54	80	6
60	67	96	6

3.09 PIPE LAYING

- A. The Pipe shall be laid according the plan grade, size, material as specified on the plans.
- B. All pipe shall be laid using approved grade boards, furnished and set by the Contractor at no additional cost to the Owner, or laser beam control. No gravity line shall be laid unless there is a minimum of three grade stakes and grade boards set to check the proper grade and alignment; the laser beam shall be checked into grades ahead prior to start of pipe placement.
- C. The Contractor shall provide and use a suitable grade rod to insure the proper grade of the pipe. Contractor shall check pipe grades at a minimum of 100 foot intervals. Proper implements, tools, equipment and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work.
- D. All pipe lifting and hauling shall conform to the pipe manufacturers' specification.
- E. Immediately before placement, the joint surfaces of each pipe section and coupling shall be inspected for the presence of foreign matter, coating blisters, rough edges or projections, and any imperfections also detected shall be corrected by pipe manufacturer's recommendations.
- F. At all times when pipe laying is not in progress, including noon hour and overnight periods, all open ends of the pipe line shall be closed by soil tight plugs or other means approved by the Engineer. If water is present in the trench, the seals shall remain in-place until the trench is pumped dry enough to perform acceptable work.

- G. If at any time the pipe becomes filled with mud or sand to such an extent, that in the judgment of the Engineer, the pipe will be damaged thereby or not function properly for the drainage purpose intended, the Engineer may require the Contractor to clean such pipe, for which no extra compensation will be allowed.
- H. For pipes deflecting more than the tolerance, Part 1.09 of this Section, the Engineer shall review and notify the Contractor of the approximate location. the Contractor shall remedy the deflection at no cost to the Owner. Any pipe showing signs of buckling or crushing will not be accepted and shall be fixed immediately.

3.10 PIPE JOINT GAPS

- A. All pipe joint gaps shall conform to the tolerances as stated in Part 1.9 of this Section. Pipe manufacturer joint gap tolerances shall be used at the time the project is bid and any technical releases after bidding shall be subject to Engineer approval.
- B. If any gap is identified to be installed outside of the tolerance, the Engineer shall review and notify the Contractor of approximate location. Further investigation may be required to determine conformance and shall be at no cost to the Owner. Method of investigation and requirements of remediation shall be determined by the Engineer.

3.11 BACKFILLING ABOVE PIPE ZONE

- A. Succeeding layers of backfill from twelve (12) inches above the pipe to the surface may contain coarse materials, but shall be free from large pieces of rock, frozen materials, debris, rubbish and other similar articles whose presence in the backfill zone would cause excessive settlement of the trench or damage to the pipe. Place material simultaneously on both sides of the pipe for the full width of the trench.
- B. If, in the opinion of the Engineer, the native trench material is unsuitable for any portion of the trench backfill, it shall be considered surplus material and disposed. The Contractor, during the excavation operations, shall make a reasonable attempt to segregate all undesirable materials encountered from suitable materials. If suitable excess excavation is required and is available from other areas of the Project, Contractor may be required to install such material in the trench with no extra payment.
- C. All trench areas beyond existing or proposed roadbeds and driveways shall be compacted by any method approved by the Engineer such that the final density will equal or exceed that of the surrounding, undisturbed soil. It shall be the Contractor's responsibility to determine the proper combination of lift thickness and number of coverage necessary with the compacting equipment used to achieve the required density.
- D. In those areas where the pipe lines are constructed in existing or proposed roadways, driveways, or other areas where settlement may cause damage, the backfill shall conform to Section 34 1000 MAINTENANCE AND RESTORATION ROADWAYS.

3.12 PRIVATE TILING (PERFORATED TILING)

- A. After completion of placing spoils from either pond excavation or ditch excavation, Contractor shall wait a minimum of 60 days for settling to occur, unless approved by the Engineer.

- B. The layout of the perforated tiling is subject to change based on landowner input. Actual quantity of installed perforated tile will be paid for.
 - 1. If Contractor wants to adjust proposed tiling layout, than a submittal of the proposed layout shall be provided to the Engineer prior to construction commencing.

3.13 SOIL LEVELING

- A. After completion of backfilling above pipe zone, all spoils shall be leveled to conform with existing ground elevations after settling has occurred.
- B. Temporary Seeding shall be in accordance with Section 32 9219 SEEDING.

3.14 CLAY PLUG

- A. Clay must be placed and mechanically compacted, at each end of pipe having a free outlet, from bottom of pipe to top of pipe.
 - 1. If not suitable clay is found on site, clay material must be hauled in from quality source or from nearby area, with permission from the landowner.
- B. Thickness of Clay Plug shall be a minimum of 2 feet.

3.15 TUNNELING/JACKING/BORING

- A. The project work may include tunneling, boring or jacking tile underneath roadways, railroads or similar locations and shall conform to Section 33 0523 TRENCHLESS PIPE INSTALLATION of the project manual.

3.16 WATER TIGHT GASKETED FITTINGS (WTGF)

- A. All WTGF's shall conform to manufacturer installation methods.
- B. WTGF's shall only be used if service pipe is ½ of the diameter of the connecting pipe.
 - 1. I.E. Connection to a 6-inch service pipe shall have a 12-inch connecting pipe.

3.17 CONNECTION TO PROPOSED TILE BRANCH

- A. All junctions of new branch tile with the mainline shall be made utilizing special tees or wyes for all connections including water tight gasketed fittings as approved by the Engineer. No extra compensation will be allowed for these junctions.

3.18 CONNECT EXISTING TILE LINES

- A. Existing tile lines intersected by the improvement shall be reconnected to the new pipe.
- B. Connections shall not be installed completely vertical from top of pipe and shall be placed slightly off of vertical, where elevations allow.
- C. All pipe can be either single-wall PE tile or HDPE dual-wall tile, whatever is available to the Contractor.

- D. Fittings to the new tile shall be WTGF, where applicable. If WTGF's not applicable, a prefabricated tee shall be used.

3.19 CROSS CONNECT TILE

- A. Cross Connections shall be constructed as shown in the details of the plans.
- B. Cross Connections shall occur at property lines (as shown on the plans) to allow flow from existing tile lines to enter new tile.
- C. All pipe shall be HDPE dual wall pipe and shall conform the specification stated above for installation.
- D. Fittings to the new tile shall be prefabricated tee or WTGF, where applicable.

3.20 DROP INTAKES

- A. Drop intakes shall be constructed as shown on the plans and shall conform to Section 33 0513 STRUCTURES AND INTAKES of the project manual.

3.21 REMOVAL OF UNUSED TILE

- A. For projects involving tile installation, Contractor will be required to remove from the project at no extra compensation, all unused tile up to a minimum amount of 0.5% to fit total amount of tile bid.
- B. Any unused tile removal in excess of 0.5% of the total amount for tile bid, Contractor will be compensated for removing the excess amount of tile in accordance with measurements to be made by the Engineer at a price to be negotiated between Contractor and Owner.

3.22 REMOVAL OF EXISTING TILE

- A. The Contractor shall remove and dispose of any existing tile in accordance to local regulations.
- B. The Contractor shall not be compensated for any existing tile removal unless specified as a bid items or agreed upon by the Engineer.

3.23 FINAL TELEVISIONING

- A. The Engineer will conduct the final televising of all installed tile.
- B. Contractor is responsible to supply all entry points for televising, the final plans allow for at most 1,000 feet in between intakes.
- C. Final televising shall commence at minimum, 30 days after the Date of installation and before acceptance and final payment of the project. Final televising shall be completed within 6 months of Final Completion.
- D. Televising will be performed using a crawler type in-pipe camera with sufficient lighting to be able to inspect the interior of the pipe. The televising camera shall have capabilities to measure pipe joint gaps to determine if the joint is within the tolerances allowed.

- E. The Engineer will provide the Contractor with any locations that do not conform to the tile installation specifications, referenced above and in the plans.
- F. The Contractor shall investigate these locations and perform corrective action to meet the tile installation specifications at no cost to the Owner.
- G. The Engineer reserves the right to hold a minimum of 5% or more of the Current Contract Price until all televising is completed, reviewed and corrected, if applicable.

3.24 COORDINATION WITH PIPE SUPPLIERS

- A. Pipe suppliers may have additional requirements and shall be consulted by the Contractor.

3.25 RIPPING DISTURBED AREAS

- A. Refer to Specification 31 0011 - SITE RESTORATION

END OF SECTION

**SECTION 33 4520
CULVERTS**

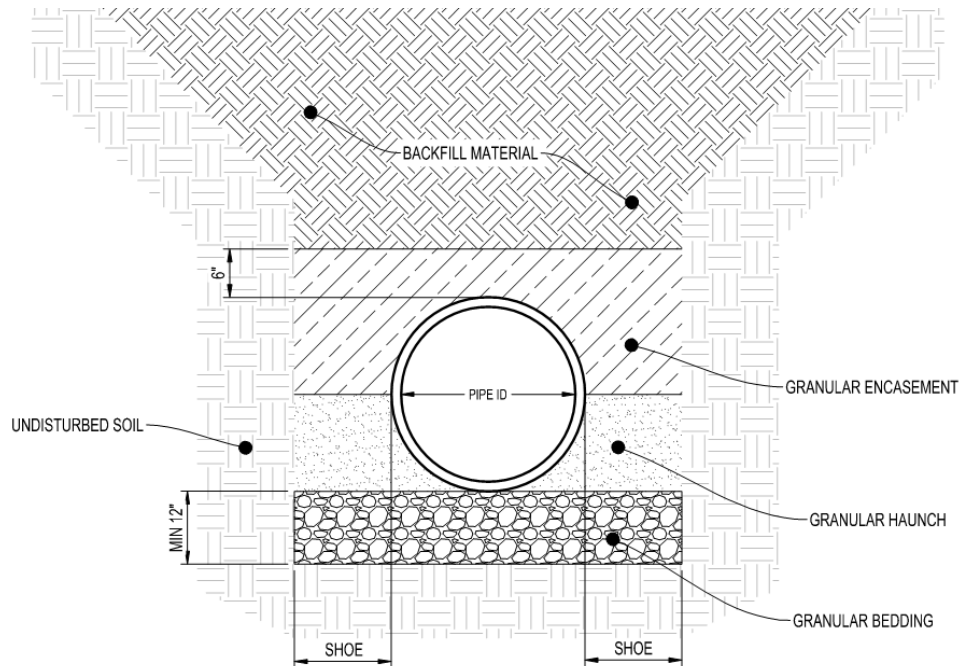
PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Standard specifications for materials of underground piping in open ditch culvert crossing applications. Specifications provided in this section shall be from the latest revision of the published standard.
- B. Standard practices for installation of underground piping in open ditch culvert crossing applications. Practices for installation in this section shall be from the latest revision of the published standard.

1.02 DEFINITIONS

- A. Granular Bedding: Material placed below pipe (12 inch minimum thickness), prior to pipe installation, to facilitate proper shaping and to achieve uniform pipe support.
- B. Granular Haunch: Material placed from the spring line of the pipe to the Granular Bedding zone.
- C. Granular Encasement: Material placed from an elevation 6 inches above the top of pipe and wider than the pipe on either side to Granular Haunch, after pipe installation, for protection of pipe and to assure proper filling of voids or thorough consolidation of backfill.
- D. Backfill: Placed from an elevation 6 inches above top of pipe to top of trench, before topsoil placement is to be replaced.



**FIGURE 4520-1
CULVERT PIPE ZONE**
NTS

- E. MnDOT: Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]
- F. Shoe: Width from outside of pipe to trench wall to perform adequate compaction of granular material

1.03 PRICE AND PAYMENT PROCEDURES

- A. Payment shall be made on measured installed quantities, by the Engineer, constructed for the work.
- B. Payment will be made at the unit prices bid for the work, shall constitute full and complete payment for the entire project including materials, labor, and all incidental items necessary for the complete and successful prosecution of the work in accordance with the intent of the drawings and specifications.
- C. Where authorized in writing by the Engineer and approved by the Owner, payment for work not included in the Bid Security Form or the Plans and Specifications, and for which no unit price has been established, will be made as provided under the General Conditions.
- D. Culvert Pipe
 - 1. Payment shall be made by the Linear Foot of installed pipe.

2. The costs shall be included in the unit price bid for the culvert crossing pipe, as indicated. Such items of work include (as incidental), but are not limited to:
 - a. Excavation and backfill of soils
 - b. Granular Haunch and Encasement Material
 - c. Soil leveling after backfilling
 - d. Site Restoration after soil leveling
 - e. Temporary seeding
 - f. Concrete collar and fabric
 - g. Rock picking of 3 inches in diameter or larger after Site Restoration
 - h. Prefabricated Bends

E. Lower Culvert Pipe

1. Payment shall be made by the Linear Foot of installed pipe.
2. The costs shall be included in the unit price bid for the culvert crossing pipe, as indicated. Such items of work include (as incidental), but are not limited to:
 - a. Excavation and backfill of soils
 - b. Protect, remove and reinstall pipe
 - c. Granular Haunch and Encasement Material
 - d. Soil leveling after backfilling
 - e. Site Restoration after soil leveling
 - f. Temporary seeding
 - g. Concrete collar and fabric
 - h. Rock picking of 3 inches in diameter or larger after Site Restoration
 - i. Prefabricated Bends

F. Culvert Aprons

1. Payment shall be made by the each occurrence.
2. The Costs shall be included in the unit price bid for the culvert apron, as indicated. Such items of work include (as incidental), but are not limited to:
 - a. Excavation and backfill of soils
 - b. Haunch Material

- c. Soil leveling after backfilling
- d. Site Restoration after soil leveling
- e. Temporary seeding
- f. Concrete collar and fabric
- g. Rock picking of 3 inches in diameter or larger after Site Restoration

G. Removal of Existing Culvert

- 1. Payment shall be made by the each occurrence.
- 2. The Costs shall be included in the unit price bid for the removal of culvert, as indicated. Such items of work include (as incidental), but are not limited to:
 - a. Excavation and backfill of soils
 - b. Soil leveling after backfilling
 - c. Site Restoration after soil leveling
 - d. Disposal of Existing Culvert
 - e. Grading of Ditch banks

H. Clay Plugs:

- 1. Payment for clay plug shall be incidental to culvert pipe.

I. Tie Bars:

- 1. Payment for tie bars shall be incidental to culvert pipe.

J. Granular Bedding

- 1. Any Granular Bedding material used shall be paid for per cubic yard as measured by the Engineer.
 - a. The relative density should be provide for accurate conversion from Tons to CY. If not provided, the relative density will be assumed to be 120 pounds per cubic foot (PCF).
 - 1) 1 CY= 1.62 Tons

K. Granular Haunch and Encasement

- 1. All Granular Haunch and Encasement material is considered incidental to the placing of culvert pipe.

1.04 REFERENCE SPECIFICATIONS

- A. MnDOT Section 2412 – Precast Concrete Box Culverts

- B. MnDOT Section 2501 - Pipe Culverts
- C. MnDOT Section 3138 - Aggregate for Surface and Base Courses
- D. MnDOT Section 3149 - Granular Materials
- E. MnDOT Standard Plates
- F. ASTM C76 - Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
- G. ASTM A760 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains
- H. ASTM A798 - Standard Practice for Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications
- I. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- J. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
- K. ASTM C1479 – Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
- L. ASTM C1577 - Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD
- M. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
- N. ASTM D1784 - Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- O. ASTM D2321 - Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- P. ASTM D3034 - Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- Q. ASTM D3212 - Joints for Drainage and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- R. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- S. ASTM F667 - 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
- T. ASTM F2764 - 6 to 60 in. [150 to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
- U. ASTM F2881 - 12 to 60 inch [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

- V. AASHTO M36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains
- W. AASHTO M170 – Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- X. AASHTO M206 – Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
- Y. AASHTO M207 – Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
- Z. AASHTO M218 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized), for Corrugated Steel Pipe
- AA. AASHTO M252 - Corrugated Polyethylene Drainage Pipe [75- to 250-mm (3- to 10-in.) Diameter]
- BB. AASHTO M294 – Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- CC. AASHTO M330 – Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
- DD. AASHTO Section 12 – Buried Structures and Tunnel Liners
- EE. AASHTO Section 18 - Highway Bridges Division I
- FF. AASHTO Section 26 – Highway Bridges Division II

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe material and sizes for the Work.

1.06 DELIVERY, STORAGE & HANDLING

- A. Deliver and store fittings and appurtenances in shipping containers with labeling in place.
- B. Store pipe on a clean and stable surface. Ensure pipe remains free of material and debris.
- C. Store and handle pipe and appurtenances as recommended by manufacturer to prevent scratching, cutting and/or gouging.

1.07 QUALITY ASSURANCE

- A. The materials used in this work shall be new and conform to the specifications for class, kind and size of material specified below, or as specified hereinafter.
- B. Materials at delivery point shall be inspected by the Contractor for loss or damage in transit. It shall be Contractor's responsibility to repair or replace damaged items in accordance with the manufacturer's instructions.
- C. The Engineer may reject any damaged pipe before installation. If Contractor installs rejected pipe from the Engineer, it shall be the Contractors responsibility to repair the pipe or provide

new pipe meeting specifications.

1.08 SITE CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data but locations may vary and cannot be guaranteed. The exact location shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing work.
- B. Contractor shall provide for protection, temporary removal and replacement, or relocation of said obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.

1.09 TOLERANCE

- A. Contractor shall perform the Work within the following tolerances unless approved by the Engineer;
 - 1. Culvert Elevation = 0.10 feet

1.10 WARRANTY

- A. Contractor shall provide a one year warranty for any defects in material or workmanship, covering replacement of pipe and freight to site.
 - 1. The warranty period shall not start until final completion of this Contract.

PART 2: PRODUCTS

2.01 MATERIALS

- A. REINFORCED CONCRETE PIPE (RCP)
 - 1. RCP shall conform to the requirements of the ASTM C76 and the Class as indicated on the drawings or recommended by the manufacturer.
 - 2. Concrete pipe joints shall have a minimum of one line of bitumastic wrap.
 - 3. Reinforced concrete pipe shall conform to MnDOT Standard Plate 3006G, current edition.
- B. REINFORCED CONCRETE PIPE APRON
 - 1. Reinforced concrete pipe apron shall conform to the requirements of the ASTM C76 and the Class as indicated on the drawings or recommended by the manufacturer.
 - 2. Concrete pipe joints shall have a minimum of one line of bitumastic wrap.
 - 3. Reinforced concrete pipe apron shall conform to MnDOT Standard Plate 3100G, current edition.
- C. REINFORCED CONCRETE ARCH PIPE

1. Reinforced concrete arch pipe shall conform to the requirements of the ASTM C76 and the Class as indicated on the drawings or recommended by the manufacturer.
2. Concrete pipe joints shall have a minimum of one line of bitumastic wrap.
3. Reinforced concrete arch pipe shall conform to MnDOT Standard Plate 3014J, current edition.

D. REINFORCED CONCRETE ARCH PIPE APRON

1. Reinforced concrete arch pipe apron shall conform to the requirements of the ASTM C76 and the Class as indicated on the drawings or recommended by the manufacturer.
2. Concrete pipe joints shall have a minimum of one line of bitumastic wrap.
3. Reinforced concrete arch pipe shall conform to MnDOT Standard Plate 3014J, current edition

E. PRECAST CONCRETE BOX CULVERTS

1. Precast concrete shall conform to the requirement of ASTM C1577 and the Class as indicated on the drawings or recommended by the manufacturer.
2. Precast Concrete Box Culverts shall conform to MnDOT Bridge Standard Plans, current edition

F. CORRUGATED POLYPROPYLENE PIPE (PP)

1. All PP pipe and fittings shall conform to the applicable specification for the pipe size and specific installation. All smooth interior shall conform to ASTM F2881, or AASHTO M330 with all pipe sizes having gasketed ends and must conform to Section 2.01.E of this specification.
2. All bends and fittings must conform to ASTM F2881 or AASHTO M330 but do not need to be gasketed.

G. CORRUGATED METAL PIPE (CMP) or CORRUGATED STEEL PIPE (CSP)

1. All CMP pipe and fittings shall conform to the applicable specification for the pipe size and specific installation. All pipe shall conform to ASTM C760, AASHTO M36 or AASHTO M218.
2. Helical (Spiral) corrugations is not an approved pipe material.
3. Steel Gage shall be a minimum of 16 gage unless specified on the construction documents or recommended by the Manufacturer and approved by the Engineer.

H. GASKETS

1. All gaskets shall be watertight and must conform to ASTM D3212 and ASTM F477.

I. GRANULAR MATERIALS

1. Granular materials furnished for foundation, bedding, encasement, backfill, or other purposes as may be specified shall consist of any natural or synthetic mineral aggregate such as sand, gravel, crushed rock, crushed stone, or slag, that shall be so graded as to meet the gradation requirements specified herein of each particular use. Suitable materials shall be subject to the approval of the Engineer.
2. At no time shall clay material be utilized as granular foundation, granular bedding or granular encasement.
3. In each case below, unless otherwise indicated, the lower limits of any particular zone shall be the top surface of the next lower course as constructed. The upper limits of each zone are established to define variable needs for material gradation and sequence of construction and other conditions. The material use and zone designations defined shall only serve to fulfill the objectives and shall not be construed to restrict the use of any particular material in other zones where the gradations require.
4. GRANULAR BEDDING ZONE
 - a. All Granular Bedding shall conform to ASTM Class I. See Table 4520-1 below.
5. GRANULAR HAUNCH AND ENCASEMENT ZONES
 - a. All Granular Haunch and Encasement shall conform to ASTM Class II. See Table 4520-1 below.
 - b. If ASTM Class II Material is not locally available, Contractor shall submit gradation of local material source for approval by the Engineer.

Table 4520 - 1
Granular Material Gradations
(Percent Passing)

Sieve Size	Pipe Zone	
	Bedding	Haunch & Encasement
	ASTM CLASS I (CRUSHED ROCK, ANGULAR)	ASTM CLASS II (CLEAN, COARSE- GRAINED)
2 in	-	-
1 1/2 in	100	100
1 in	-	-
3/4 in	-	-
3/8 in	< 25	-
No. 4	≤ 15	-
No. 10	-	-
No. 40	-	-
No. 200	< 12	<12

PART 3: EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall examine the project site, make determinations concerning soil and groundwater conditions, and review requirements of the plans and specifications related to construction of the work. Contractor shall provide the equipment and related appliances necessary to perform the work in accordance with the plan for culvert and/or drain tile construction.
- B. Prior to crossing any public road, the Contractor shall notify the appropriate road authority at least 15 days in advance and shall be responsible for the utility locate.

3.02 IN-FIELD ADJUSTMENTS

- A. The Engineer may adjust the plans after tile installation is complete as outlined in Article 11.04 (Field Orders) of the General Conditions. The Engineer will attempt to reuse any bends and fittings that were originally planned.

- B. 1. In the event construction in different depth zones are bid, payment for the depth zone as constructed will be made.

3.03 EXCAVATION

- A. Excavation of every description and of whatever materials encountered shall be made to the alignment and depth shown on the drawings or as directed by the Engineer. Excavation shall be made by open cut. Sides of trenches shall be kept as nearly vertical as possible but in conformance with OSHA standards and the trench shall be so braced, sheeted and drained that workers may work safely and efficiently. The trenches shall be sufficiently straight between designated angle points to permit the pipe to be laid true to line in the approximate center of the trench.
- B. The trench width may vary with and depend upon the depth of trench, the diameter of pipe to be laid and the nature of the material to be excavated; but in any case shall be of ample width to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted properly.
- C. The pipe shall be laid upon soil cut true and even, so that the barrel of the pipe will have a bearing for at least one-fourth of the circumference and its full length. Bell holes shall be excavated to insure the pipe resting for its entire length upon the bottom of the trench. See Paragraph "3.05 PIPE BEDDING AND ENCASEMENT" for bedding requirements.
- D. Whenever wet, soft or unstable soil, incapable of properly supporting the pipe, manholes or other structures encountered in the trench, a further depth and/or width shall be excavated and refilled to trench bottom grade with concrete, gravel or other approved suitable material, thoroughly compacted to assure a firm foundation.

3.04 SHORING & SHEETING

- A. Shoring, sheeting, bracing, etc., shall be put in place and maintained by the Contractor at their own expense, as may be required to support the side of excavation and to prevent any movement which may in any way endanger personnel or injure or delay the work or endanger adjacent buildings or other structures. Where sheeting and bracing are used, the trench width shall be increased accordingly. The sheeting and bracing shall be removed in such manner as not to endanger the constructed pipe or other structures, utilities or property, whether public or private. It shall be the Contractor's responsibility and duty to be familiar with local, state, and federal regulations relating to this type of work and he shall assume the responsibility for compliance therewith.

3.05 PIPE BEDDING AND ENCASEMENT

- A. All pipes shall be bedded and encased as indicated on the drawings, details, and referenced herein;
- B. In the event that natural, suitable, granular material is not encountered during normal excavation of the trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the pipe as required, the Contractor shall provide and place such approved material as required. If suitable excess excavation is available from other area of the project, Contractor may be required to install such material in the trench.

- C. Soils consisting of clay including but not limited to clayey gravel, clays and silts are not permissible for use as Bedding, Encasement or Foundation materials.
- D. Flat Bottom Installation Method
 - 1. Reinforced Concrete Pipe
 - a. Concrete pipe shall be laid with the groove (or bell) ends up grade; the tongue (or spigot) end shall be firmly inserted in the groove.
 - b. Granular Bedding shall be 12 inches thick with material being compacted in 6 inch lifts to the spring line of the pipe.
 - c. Select Native Material will be an acceptable backfill above the springline of the pipe.
 - 2. Precast Concrete Box Culvert
 - a. In accordance with MnDOT Specification Section 2412.
 - 1) Granular Bedding shall be 24 inches thick with material being compacted in 6 inch lifts.
 - 2) Select Native Material will be an acceptable backfill.
 - 3. CMP
 - a. In accordance with ASTM A798,
 - 1) Granular Bedding shall be a minimum of 12 inches thick with material compacted in 6 inch lifts.
 - 2) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe.
 - 4. Corrugated Polypropylene Pipe (PP)
 - a. In accordance with ASTM F449.
 - 1) Granular Bedding shall be a minimum of 12 inches thick.
 - 2) Granular Encasement material shall be compacted in 6 inch lifts from the bottom of the pipe to 6 inches above the top of the pipe.

3.06 PIPE LAYING

- A. The Pipe shall be laid according the plan grade, size, material as specified on the plans.
- B. All pipe shall be laid using approved grade boards, furnished and set by the Contractor at no additional cost to the Owner, or laser beam control. No gravity line shall be laid unless there is a minimum of three grade stakes and grade boards set to check the proper grade and alignment; the laser beam shall be checked into grades ahead prior to start of pipe placement.

- C. The Contractor shall provide and use a suitable grade rod to insure the proper grade of the pipe. Contractor shall check pipe grades at every section or every 5 feet, whichever is greater. Proper implements, tools, equipment and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work.
- D. All pipe lifting and hauling shall conform to the pipe manufacturers' specification.
- E. Immediately before placement, the joint surfaces of each pipe section and coupling shall be inspected for the presence of foreign matter, coating blisters, rough edges or projections, and any imperfections also detected shall be corrected by pipe manufacturer's recommendations.
- F. At all times when pipe laying is not in progress, including noon hour and overnight periods, all open ends of the pipe line shall be closed by soil tight plugs or other means approved by the Engineer. If water is present in the trench, the seals shall remain in-place until the trench is pumped dry enough to perform acceptable work.
- G. If at any time the pipe becomes filled with mud or sand to such an extent, that in the judgment of the Engineer, the pipe will be damaged thereby or not function properly for the drainage purpose intended, the Engineer may require the Contractor to clean such pipe, for which no extra compensation will be allowed.
- H. Maximum pipe deflection shall be 5% of the inside diameter. For pipes deflecting more than this amount, Contractor shall remove and relay pipe at no cost to the Owner. No pipe showing signs of bucking or crushing will be accepted.

3.07 CLAY PLUG

- A. Clay must be placed and mechanically compacted, at each end of pipe having a free outlet, from bottom of pipe to top of crossing.
- B. If not suitable clay is found on site, clay material must be hauled in from quality source or from nearby area, with permission from the landowner.
- C. Thickness of Clay Plug shall be in accordance to the construction drawings but a minimum of 2 feet at each end with adequate topsoil for vegetation cover.

3.08 PIPE JOINTS

- A. All concrete pipe joint gaps shall be tied.

3.09 BACKFILLING ABOVE PIPE ZONE

- A. Succeeding layers of backfill from six (6) inches above the pipe to the surface may contain coarse materials, but shall be free from large pieces of rock, frozen materials, debris, rubbish and other similar articles whose presence in the backfill zone would cause excessive settlement of the trench or damage to the pipe. Place material simultaneously on both sides of the pipe for the full width of the trench.
- B. If, in the opinion of the Engineer, the native trench material is unsuitable for any portion of the trench backfill, it shall be considered surplus material and disposed. The Contractor, during the excavation operations, shall make a reasonable attempt to segregate all

undesirable materials encountered from suitable materials. If suitable excess excavation is required and is available from other areas of the Project, Contractor may be required to install such material in the trench with no extra payment.

- C. In those areas where the pipe lines are constructed in existing or proposed roadways, driveways, or other areas where settlement may cause damage, the backfill shall conform to Section 34 1000 MAINTENANCE AND RESTORATION ROADWAYS.

3.10 SOIL LEVELING

- A. After completion of backfilling above pipe zone, all spoils shall be leveled to conform with existing ground elevations after settling has occurred.

3.11 TUNNELING/JACKING/BORING

- A. The project work may include tunneling, boring or jacking tile underneath roadways, railroads or similar locations and shall conform to Section 33 0523 TRENCHLESS PIPE INSTALLATION of the project manual.

3.12 REMOVAL OF CULVERT

- A. The Contractor shall remove and dispose of the existing culvert.
 - 1. The existing culvert will become property of the Contractors.
- B. Preference shall be given to the landowner to salvage and haul culverts offsite upon request. It is the responsibility of the landowner to complete if requested.

3.13 COORDINATION WITH PIPE SUPPLIERS

- A. Pipe suppliers may have additional requirements and shall be consulted by the Contractor.

END OF SECTION

**SECTION 34 0100
MAINTENANCE AND RESTORATION ROADWAYS**

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Standard specifications for materials of restoring and maintaining roadways. Specifications provided in this section shall be from the latest revision of the published standard.
- B. Standard practices for restoring and maintaining roadways. Practices for installation in this section shall be from the latest revision of the published standard.

1.02 DEFINITIONS

- A. Haul Road = Any Public or Private road or driveway used to transport materials to complete the Work.
- B. MnDOT = Minnesota Department of Transportation [Standard Specifications for Road and Bridge Construction]

1.03 PRICE AND PAYMENT PROCEDURES

- A. Payment shall be made on measured installed quantities, by the Engineer, constructed for the work.
- B. Payment will be made at the unit prices bid for the work, shall constitute full and complete payment for the entire project including materials, labor, and all incidental items necessary for the complete and successful prosecution of the work in accordance with the intent of the drawings and specifications.
- C. Where authorized in writing by the Engineer and approved by the Owner, payment for work not included in the Bid Security Form or the Plans and Specifications, and for which no unit price has been established, will be made as provided under the General Conditions.
- D. Open Cut and Restore Gravel Road or Driveway
 - 1. Open Cut and Restore Gravel Road or Driveway shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of substructure of roadway
 - b. Resurface roadway with aggregate material
 - c. Maintenance of Road until complete settlement
- E. Open Cut and Restore Paved Road
 - 1. Open Cut and Restore Paved Road shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of substructure of roadway

- b. Subgrade preparation
 - c. Resurface roadway with appropriate material
 - d. Maintenance of Road until complete settlement
- F. Open Cut and Restore Field Crossing
- 1. Open Cut and Restore Field Crossing shall be paid for by each occurrence as measured by the Engineer and shall include (as incidental) but not limited to:
 - a. Excavation and backfill of substructure of roadway
 - b. Resurface roadway with aggregate material, if present
 - c. Maintenance of Road until complete settlement
- G. Maintenance of any Paved Road
- 1. Measurement will not be made. Cost to maintain all paved roads shall be considered incidental to the Work and no claim for compensation or extra work will be accepted.
- H. Maintenance of any Gravel Road
- 1. Measurement will not be made. Cost to maintain all gravel roads shall be considered incidental to the Work and no claim for compensation or extra work will be accepted.

1.04 REFERENCE SPECIFICATIONS

- A. MnDOT Section 1515 – Control of Haul Roads
- B. MnDOT Section 2051 – Maintenance and Restoration of Haul Roads
- C. MnDOT Section 2112 – Subgrade Preparation
- D. MnDOT Section 2118 – Aggregate Surfacing
- E. MnDOT Section 2211 – Aggregate Base
- F. MnDOT Section 3138 - Aggregate for Surface and Base Courses
- G. MnDOT Section 3149 - Granular Materials
- H. MnDOT Standard Plates

1.05 SITE CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data but locations may vary and cannot be guaranteed. The exact location shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing utilities.
- B. Additional underground utilities may exist that are not shown on the plans and shall be treated as if they are shown on the plans unless specified by the Engineer.

- C. Contractor shall provide for protection, temporary removal and replacement, or relocation of said obstructions as required for the performances of the work required in these contract documents. No extra payment will be made for this work.

PART 2: PRODUCTS

2.01 MATERIALS

A. AGGREGATES

- 1. Aggregates shall conform to MnDOT Section 3138 for all gradations.

PART 3: EXECUTION

3.01 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall examine the project site, make determinations concerning soil and groundwater conditions, and review requirements of the plans and specifications related to construction of the work. Contractor shall provide the equipment and related appliances necessary to perform the work in accordance with the plan for agricultural drain tile construction.
- B. The Contractor shall be responsible for all utility locates and traffic control.

3.02 MAINTENANCE OF ROADWAY

- A. The Contractor shall restore any haul road to an equivalent or greater condition prior to the start of hauling operations.
- B. The Contractor shall provide additional aggregate material (matching existing roadway material), as necessary, to maintain the current depth and condition of the road.
- C. The Contractor shall conform to MnDOT Section 2051.

3.03 RESTORATION OF ROADWAY

- A. The Contractor shall notify the appropriate road authority at least 15 days in advance of crossing any public road.
- B. The Contractor shall notify the appropriate property owners at least 15 days in advance of crossing any private road or driveway.
 - 1. The Contractor shall coordinate with appropriate property owners on temporary access, as needed by the property owner.
- C. The backfill above the pipe zone shall be compacted as follows;
 - 1. Compaction requirements shall be 95% maximum density (ASTM D698) from the pipe zone to three feet below finished grade, and 100% maximum density (ASTM D698) in the upper three feet of the trench.
 - 2. Tests to determine the compacted density of the backfill may be ordered if compaction is not adequate or is questionable.

- D. Roadway surface material shall conform to MnDOT Class 5 aggregate base.
 - 1. Thickness shall be a minimum of 10 inches or equivalent to existing thickness, whichever is greater.

- E. If paved road, Contractor shall match pre-construction conditions for the following but not be limited to;
 - 1. Subgrade thickness
 - 2. Pavement base thickness
 - 3. Pavement thickness
 - 4. Pavement type and material (asphalt/concrete)

END OF SECTION



Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications¹

This standard is issued under the fixed designation D2321; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This practice provides recommendations for the installation of buried thermoplastic pipe used in sewers and other gravity-flow applications. These recommendations are intended to ensure a stable underground environment for thermoplastic pipe under a wide range of service conditions. However, because of the numerous flexible plastic pipe products available and the inherent variability of natural ground conditions, achieving satisfactory performance of any one product may require modification to provisions contained herein to meet specific project requirements.

1.2 The scope of this practice necessarily excludes product performance criteria such as minimum pipe stiffness, maximum service deflection, or long term strength. Thus, it is incumbent upon the product manufacturer, specifier, or project engineer to verify and assure that the pipe specified for an intended application, when installed according to procedures outlined in this practice, will provide a long term, satisfactory performance according to criteria established for that application. A commentary on factors important in achieving a satisfactory installation is included in [Appendix X1](#).

NOTE 1—Specific paragraphs in the appendix are referenced in the body of this practice for informational purposes.

NOTE 2—The following ASTM standards may be found useful in connection with this practice: Practice [D420](#), Test Method [D1556](#), Method [D2216](#), Specification [D2235](#), Test Method [D2412](#), Specification [D2564](#), Practice [D2657](#), Practice [D2855](#), Test Methods [D2922](#), Test Method [D3017](#), Practice [F402](#), Specification [F477](#), Specification [F545](#), and Specification [F913](#).

NOTE 3—Most Plumbing Codes and some Building Codes have provisions for the installation of underground “building drains and building sewers.” See them for plumbing piping applications.

1.3 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- [D8 Terminology Relating to Materials for Roads and Pavements](#)
- [D420 Guide to Site Characterization for Engineering Design and Construction Purposes \(Withdrawn 2011\)³](#)
- [D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)
- [D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort \(12 400 ft-lbf/ft³ \(600 kN-m/m³\)\)](#)
- [D1556 Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method](#)
- [D2216 Test Methods for Laboratory Determination of Water \(Moisture\) Content of Soil and Rock by Mass](#)
- [D2235 Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene \(ABS\) Plastic Pipe and Fittings](#)
- [D2412 Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading](#)
- [D2487 Practice for Classification of Soils for Engineering Purposes \(Unified Soil Classification System\)](#)
- [D2488 Practice for Description and Identification of Soils \(Visual-Manual Procedure\)](#)
- [D2564 Specification for Solvent Cements for Poly\(Vinyl Chloride\) \(PVC\) Plastic Piping Systems](#)
- [D2657 Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings](#)
- [D2855 Practice for Making Solvent-Cemented Joints with Poly\(Vinyl Chloride\) \(PVC\) Pipe and Fittings](#)

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard

- D2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth) (Withdrawn 2007)³
- D3017 Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
- D3839 Guide for Underground Installation of “Fiberglass” (Glass-Fiber Reinforced Thermosetting-Resin) Pipe
- D4318 Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- F402 Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings
- F412 Terminology Relating to Plastic Piping Systems
- F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F545 Specification for PVC and ABS Injected Solvent Cemented Plastic Pipe Joints (Withdrawn 2001)³
- F913 Specification for Thermoplastic Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F1668 Guide for Construction Procedures for Buried Plastic Pipe

2.2 AASHTO Standard:⁴

- AASHTO M145 Classification of Soils and Soil Aggregate Mixtures

3. Terminology

3.1 *General*—Definitions used in this practice are in accordance with Terminologies F412 and D8 and Terminology D653 unless otherwise indicated.

3.2 *Definitions:*

3.2.1 Terminology D653 definitions used in this standard:

3.2.2 *compaction curve (Proctor curve) (moisture-density curve)*—the curve showing the relationship between the dry unit weight (density) and the water content of a soil for a given compactive effort.

3.2.3 *optimum water content*—the water content at which a soil can be compacted to a maximum dry unit weight by a given compactive effort.

3.2.4 *percent compaction*—the ratio, expressed as a percentage, of: (1) dry unit weight of a soil, to (2) maximum unit weight obtained in a laboratory compaction test.

3.2.5 *maximum unit weight*—the dry unit weight defined by the peak of a compaction curve.

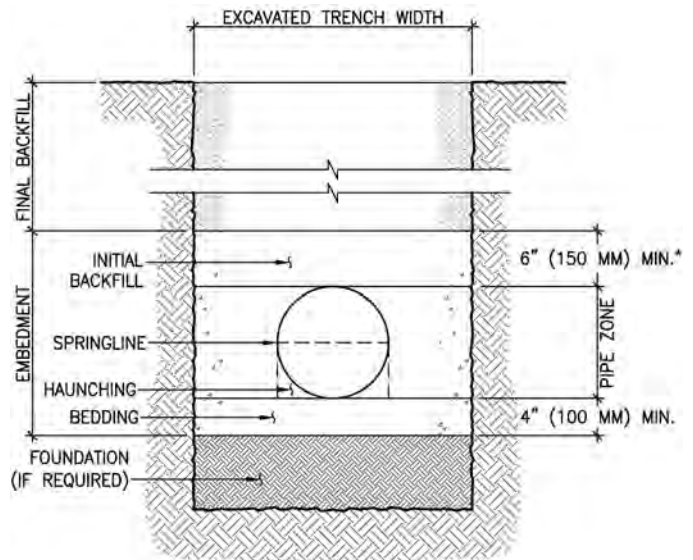
3.3 *Definitions of Terms Specific to This Standard:*

3.3.1 *foundation, bedding, haunching, initial backfill, final backfill, pipe zone, excavated trench width*—See Fig. 1 for meaning and limits, and trench terminology.

3.3.2 *aggregate*—a granular material of mineral composition such as sand, gravel, shell, slag or crushed stone (see Terminology D8).

3.3.3 *deflection*—any change in the inside diameter of the pipe resulting from installation and imposed loads. Deflection

⁴ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.



* See 7.6 Minimum Cover

FIG. 1 Trench Cross Section

may be either vertical or horizontal and is usually reported as a percentage of the base (undeflected) inside pipe diameter.

3.3.4 *engineer*—the engineer in responsible charge of the work or his duly recognized or authorized representative.

3.3.5 *manufactured aggregates*—aggregates such as slag that are products or byproducts of a manufacturing process, or natural aggregates that are reduced to their final form by a manufacturing process such as crushing.

3.3.6 *modulus of soil reaction (E')*—an empirical value used in the Iowa deflection formula that defines the stiffness of the soil embedment around a buried pipe

3.3.7 *open-graded aggregate*—an aggregate that has a particle size distribution such that, when it is compacted, the voids between the aggregate particles, expressed as a percentage of the total space occupied by the material, are relatively large.

3.3.8 *processed aggregates*—aggregates that are screened, washed, mixed, or blended to produce a specific particle size distribution.

3.3.9 *secant constrained soil modulus (M_s)*— a value for soil stiffness determined as the secant slope of the stress-strain curve of a one-dimensional compression test; M_s can be used in place of E' in the Iowa deflection formula.

3.3.10 *standard proctor density*—the maximum dry unit weight of soil compacted at optimum moisture content, as obtained by laboratory test in accordance with Test Methods D698.

4. Significance and Use

4.1 This practice is for use by designers and specifiers, installation contractors, regulatory agencies, owners, and inspection organizations who are involved in the construction of sewers and other gravity-flow applications that utilize flexible thermoplastic pipe. As with any standard practice, modifications may be required for specific job conditions or for special local or regional conditions. Recommendations for inclusion of

this practice in contract documents for a specific project are given in **Appendix X2**.

5. Materials

5.1 *Classification*—Soil types used or encountered in burying pipes include those classified in **Table 1** and natural,

manufactured, and processed aggregates. The soil classifications are grouped into soil classifications in **Table 2** based on the typical soil stiffness when compacted. Class I indicates a soil that generally provides the highest soil stiffness at any given percent compaction, and provides a given soil stiffness with the least compactive effort. Each higher-number soil class

TABLE 1 Soil Classification Chart (see Classification D2487)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse-Grained Soils	gravels	clean gravels	$C_u \geq 4$ and $1 \leq C_c \leq 3^C$	GW	well-graded gravel ^D	
	More than 50% retained on No. 200 sieve	more than 50% of coarse fraction retained on No. 4 sieve	less than 5% of fines ^E	$C_u < 4$ and/or $1 > C_c > 3^C$	GP	poorly graded gravel ^D
			gravels with more than 12 % fines ^E	Fines classify as ML or MH	GM	silty gravel ^{DFG}
	sands	50% or more of coarse fraction passes on No. 4 sieve	clean sands	$C_u \geq 6$ and $1 \leq C_c \leq 3^C$	SW	well-graded sand ^H
			less than 5% fines ^I	$C_u < 6$ and/or $1 > C_c > 3^C$	SP	poorly graded sand ^H
			sand with fines	Fines classify as ML or MH	SM	silty sand ^{FGH}
	Fine-Grained Soils	silts and clays	inorganic	PI > 7 and plots on or above "A" line ^J	CL	lean clay ^{KLM}
PI < 4 and plots below "A" line ^J				ML	silt ^{KLM}	
50% or more passes the No. 200 sieve		liquid limit less than 50	organic	Liquid Limit-Oven dried	<0.75	organic clay ^{KLMN}
				Liquid Limit-Not dried		organic silt ^{KLMO}
silts and clays		inorganic	PI plots on or above "A" line	CH	fat clay ^{KLM}	
			Plots below "A" line	MH	elastic silt ^{KLM}	
liquid limit 50 or more	organic	Liquid Limit-Oven Dried	<0.75	organic clay ^{KLMP}		
		Liquid Limit-Not Dried		organic silt ^{KLMQ}		
Highly organic soils	primarily organic matter, dark in color, and organic odor			PT	peat	

^A Based on the material passing the 3-in. (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C

$$C_u = \frac{D_{60}}{D_{10}}$$

$$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^D If soil contains ≥ 15 % sand, add "with sand" to group name.

^E Gravels with 5 to 12 % fines require dual symbols:

GW-GM well-graded gravel with silt:

GW-GC well-graded gravel with clay

GP-GM poorly graded gravel with silt

GP-GC poorly graded gravel with clay

^F If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^G If fines are organic, add "with organic fines" to group name.

^H If soil contains ≥ 15 % gravel, add "with gravel" to group name.

^I Sands with 5 to 12 % fines require dual symbols:

SW-SM well-graded sand with silt

SW-SC well-graded sand with clay

SP-SM poorly graded sand with silt

SP-SC poorly graded sand with clay

^J If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay (see Test Method D4318).

^K If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.

^M If soil contains ≥ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

^N PI ≥ 4 and plots on or above "A" line.

^O PI < 4 or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.

TABLE 2 Soil Classes

Soil Group ^{A,B}	Soil Class	American Association of State Highway and Transportation Officials (AASHTO) Soil Groups ^C
Crushed rock, angular ^D : 100% passing 1-1/2in. sieve, \leq 15 % passing #4 sieve, \leq 25 % passing 3/8in. sieve and \leq 12 % passing #200 sieve	Class I	...
Clean, coarse grained soils: SW, SP, GW, GP or any soil beginning with one of these symbols with \leq 12 % passing #200 sieve ^{E,F}	Class II	A1,A3
Coarse grained soils with fines: GM, GC, SM, SC, or any soil beginning with one of these symbols, containing > 12 % passing #200 sieve; Sandy or gravelly fine-grained soils: CL, ML, or any soil beginning with one of these symbols, with \geq 30 % retained on #200 sieve	Class III	A-2-4, A-2-5, A-2-6, or A-4 or A-6 soils with more than 30% retained on #200 sieve
Fine-grained soils: CL, ML, or any soil beginning with one of these symbols, with <30 % retained on #200 sieve	Class IV	A-2-7, or A-4, or A-6 soils with 30% or less retained on #200 sieve
MH, CH, OL, OH, PT	Class V Not for use as embedment	A5, A7

^A See Classification **D2487**, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

^B Limits may be imposed on the soil group to meet project or local requirements if the specified soil remains within the group. For example, some project applications require a Class I material with minimal fines to address specific structural or hydraulic conditions and the specification may read "Use Class I soil with a maximum of 5% passing the #200 sieve."

^C AASHTO M145, Classification of Soils and Soil Aggregate Mixtures.

^D All particle faces shall be fractured.

^E Materials such as broken coral, shells, and recycled concrete, with \leq 12% passing a No. 200 sieve, are considered to be Class II materials. These materials should only be used when evaluated and approved by the Engineer

^F Uniform fine sands (SP) with more than 50% passing a No. 100 sieve (0.006 in., 0.15 mm) are very sensitive to moisture and should not be used as backfill unless specifically allowed in the contract documents. If use of these materials is allowed, compaction and handling procedures should follow the guidelines for Class III materials.

provides successively less soil stiffness at a given percent compaction and requires greater compactive effort to provide a given level of soil stiffness

NOTE 4—See Practices **D2487** and **D2488** for laboratory and field visual-manual procedures for identification of soils.

NOTE 5—Processed materials produced for highway construction, including coarse aggregate, base, subbase, and surface coarse materials, when used for foundation, embedment, and backfill, should be categorized in accordance with this section and **Table 1** in accordance with particle size and gradation.

5.2 Installation and Use—**Table 3** provides recommendations on installation and use based on soil classification and location in the trench. Soil Classes I to IV should be used as recommended in **Table 3**. Soil Class V, including clays and silts with liquid limits greater than 50, organic soils, and frozen soils, shall be excluded from the pipe-zone embedment.

5.2.1 Class I—Class I materials provide maximum stability and pipe support for a given percent compaction due to the low content of sand and fines. With minimum effort these materials can be installed at relatively high-soil stiffnesses over a wide range of moisture contents. In addition, the high permeability of Class I materials may aid in the control of water, and these materials are often desirable for embedment in rock cuts where water is frequently encountered. However, when ground-water flow is anticipated, consideration should be given to the potential for migration of fines from adjacent materials into the open-graded Class I materials. (See **X1.8**.)

5.2.2 Class II—Class II materials, when compacted, provide a relatively high level of pipe support; however, open-graded groups may allow migration and the sizes should be checked for compatibility with adjacent material. (See **X1.8**.)

5.2.3 Class III—Class III materials provide less support for a given percent compaction than Class I or Class II materials. Higher levels of compactive effort are required and moisture content must be near optimum to minimize compactive effort and achieve the required percent compaction. These materials provide reasonable levels of pipe support once proper percent compaction is achieved.

5.2.4 Class IV—Class IV materials require a geotechnical evaluation prior to use. Moisture content must be near optimum to minimize compactive effort and achieve the required percent compaction. Properly placed and compacted, Class IV materials can provide reasonable levels of pipe support; however, these materials may not be suitable under high fills, surface-applied wheel loads, or under high-energy-level vibratory compactors and tampers. Do not use where water conditions in the trench may prevent proper placement and compaction.

NOTE 6—The term "high energy level vibratory compactors and tampers" refers to compaction equipment that might deflect or distort the pipe more than permitted by the specifications or the manufacturer.

5.2.5 Class V—Class V materials should be excluded from pipe-zone embedment.

TABLE 3 Recommendations for Installation and Use of Soils and Aggregates for Foundation and Pipe-Zone Embedment

Soil Class ^A	Class I ^B	Class II	Class III	Class IV
General Recommendations and Restrictions	Acceptable and common where no migration is probable or when combined with a geotextile filter media. Suitable for use as a drainage blanket and under drain where adjacent material is suitably graded or when used with a geotextile filter fabric (see X1.8).	Where hydraulic gradient exists check gradation to minimize migration. Clean groups are suitable for use as a drainage blanket and underdrain (see Table 2). Uniform fine sands (SP) with more than 50 % passing a #100 sieve (0.006 in., 0.15 mm) behave like silts and should be treated as Class IV soils.	Do not use where water conditions in trench prevent proper placement and compaction. Not recommended for use with pipes with stiffness of 9 psi or less	Difficult to achieve high-soil stiffness. Do not use where water conditions in trench prevent proper placement and compaction. Not recommended for use with pipes with stiffness of 9 psi or less
Foundation	Suitable as foundation and for replacing over-excavated and unstable trench bottom as restricted above.	Suitable as foundation and for replacing over-excavated and unstable trench bottom as restricted above. Install and compact in 12 in. (300 mm) maximum layers	Suitable for replacing over-excavated trench bottom as restricted above. Install and compact in 6 in. (150 mm) maximum layers	Suitable for replacing over-excavated trench bottom as restricted above. Install and compact in 6-in (150 mm) maximum layers
Pipe Embedment	Suitable as restricted above. Work material under pipe to provide uniform haunch support.	Suitable as restricted above. Work material under pipe to provide uniform haunch support.	Suitable as restricted above. Difficult to place and compact in the haunch zone.	Suitable as restricted above. Difficult to place and compact in the haunch zone.
Embedment Compaction: Min Recommended Percent Compaction, SPD ^D	See Note ^C	85 % (SW and SP soils) For GW and GP soils see Note ^E	90 %	95 %
Relative Compactive Effort Required to Achieve Minimum Percent Compaction	low	moderate	high	very high
Compaction Methods	vibration or impact	vibration or impact	impact	impact
Required Moisture Control	none	none	Maintain near optimum to minimize compactive effort	Maintain near optimum to minimize compactive effort

^A Class V materials are unsuitable as embedment. They may be used as final backfill as permitted by the engineer.

^B Class I materials have higher stiffness than Class II materials, but data on specific soil stiffness of placed, uncompacted Class I materials can be taken equivalent to Class II materials compacted to 95% of maximum standard Proctor density (SPD95), and the soil stiffness of compacted Class I materials can be taken equivalent to Class II materials compacted to 100% of maximum standard Proctor density (SPD100). Even if placed uncompacted (that is, dumped), Class I materials should always be worked into the haunch zone to assure complete placement.

^C Suitable compaction typically achieved by dumped placement (that is, uncompacted but worked into haunch zone to ensure complete placement).

^D SPD is standard Proctor density as determined by Test Method D698.

^E Place and compact GW and GP soils with at least two passes of compaction equipment.

5.3 Moisture Content of Embedment Materials—The moisture content of embedment materials must be controlled to permit placement and compaction to required levels. For soils with low permeability (that is, Class III and Class IV and some borderline Class II soils), moisture content is normally controlled to ± 3 % of optimum (see Test Method D698). The practicality of obtaining and maintaining the required limits on moisture content is an important criterion for selecting mate-

rials, since failure to achieve required percent compaction, especially in the pipe zone embedment, may result in excessive deflection.

5.4 Maximum Particle Size—Maximum particle size for embedment is limited to material passing a 1½-in. (37.5-mm) sieve (see Table 2). To enhance placement around small diameter pipe and to prevent damage to the pipe wall, a smaller

maximum size may be required (see **X1.9**). When final backfill contains rocks, cobbles, etc., the engineer may require greater initial backfill cover levels (see **Fig. 1**).

6. Trench Excavation

6.1 *General*—Procedures for trench excavation that are especially important in flexible thermoplastic pipe installations are given herein.

6.1.1 *Excavation*—Excavate trenches to ensure that sides will be stable under all working conditions. Slope trench walls or provide supports in conformance with all local and national standards for safety. Open only as much trench as can be safely maintained by available equipment. Backfill all trenches as soon as practicable, but not later than the end of each working day.

6.2 *Water Control*—Do not lay or embed pipe in standing or running water. At all times prevent runoff and surface water from entering the trench.

6.2.1 *Ground Water*—When groundwater is present in the work area, dewater to maintain stability of in-situ and imported materials. Maintain water level below pipe bedding and foundation to provide a stable trench bottom. Use, as appropriate, sump pumps, well points, deep wells, geofabrics, perforated underdrains, or stone blankets of sufficient thickness to remove and control water in the trench. When excavating while depressing ground water, ensure the ground water is below the bottom of cut at all times to prevent washout from behind sheeting or sloughing of exposed trench walls. Maintain control of water in the trench before, during, and after pipe installation, and until embedment is installed and sufficient backfill has been placed to prevent flotation of the pipe. To preclude loss of soil support, employ dewatering methods that minimize removal of fines and the creation of voids in in-situ materials.

6.2.2 *Running Water*—Control running water emanating from drainage of surface or ground water to preclude undermining of the trench bottom or walls, the foundation, or other zones of embedment. Provide dams, cutoffs or other barriers periodically along the installation to preclude transport of water along the trench bottom. Backfill all trenches after the pipe is installed to prevent disturbance of pipe and embedment.

6.2.3 *Materials for Water Control*—Use suitably graded materials in foundation or bedding layers or as drainage blankets for transport of running water to sump pits or other drains. Use well graded materials, along with perforated underdrains, to enhance transport of running water, as required. Select the gradation of the drainage materials to minimize migration of fines from surrounding materials (see **X1.8**).

6.3 *Minimum Trench Width*—Where trench walls are stable or supported, provide a width sufficient, but no greater than necessary, to ensure working room to properly and safely place and compact haunching and other embedment materials. The space between the pipe and trench wall must be wider than the compaction equipment used in the pipe zone. Minimum width shall be not less than the greater of either the pipe outside diameter plus 16 in. (400 mm) or the pipe outside diameter times 1.25, plus 12 in. (300 mm). In addition to safety considerations, trench width in unsupported, unstable soils will

depend on the size and stiffness of the pipe, stiffness of the embedment and in-situ soil, and depth of cover (see **X1.10**). Specially designed equipment may enable the satisfactory installation and embedment of pipe in trenches narrower than specified above. If it is determined that the use of such equipment provides an installation consistent with the requirements of this standard, minimum trench widths may be reduced, as approved by the engineer.

6.4 *Support of Trench Walls*—When supports such as trench sheeting, trench jacks, trench shields or boxes are used, ensure that support of the pipe and its embedment is maintained throughout installation. Ensure that sheeting is sufficiently tight to prevent washing out of the trench wall from behind the sheeting. Provide tight support of trench walls below viaducts, existing utilities, or other obstructions that restrict driving of sheeting.

6.4.1 *Supports Left in Place*—Unless otherwise directed by the engineer, sheeting driven into or below the pipe zone should be left in place to preclude loss of support of foundation and embedment materials. When top of sheeting is to be cut off, make cut 1.5 ft (0.5 m) or more above the crown of the pipe. Leave rangers, whalers, and braces in place as required to support cutoff sheeting and the trench wall in the vicinity of the pipe zone. Timber sheeting to be left in place is considered a permanent structural member and should be treated against biological degradation (for example, attack by insects or other biological forms) as necessary, and against decay if above ground water.

NOTE 7—Certain preservative and protective compounds may react adversely with some types of thermoplastics, and their use should be avoided in proximity of the pipe material.

6.4.2 *Movable Trench Wall Supports*—Do not disturb the installed pipe and its embedment when using movable trench boxes and shields. Movable supports should not be used below the top of the pipe zone unless approved methods are used for maintaining the integrity of embedment material. Before moving supports, place and compact embedment to sufficient depths to ensure protection of the pipe. As supports are moved, finish placing and compacting embedment.

6.4.3 *Removal of Trench Wall Support*—If the engineer permits the use of sheeting or other trench wall supports below the pipe zone, ensure that pipe and foundation and embedment materials are not disturbed by support removal. Fill voids left on removal of supports and compact all material as required.

6.5 *Rock or Unyielding Materials in Trench Bottom*—If ledge rock, hard pan, shale, or other unyielding material, cobbles, rubble or debris, boulders, or stones larger than 1.5 in. (40 mm) are encountered in the trench bottom, excavate a minimum depth of 6 in. (150 mm) below the pipe bottom and replace with proper embedment material (see **7.2.1**).

7. Installation

7.1 *General*—Recommendations for use of the various types of materials classified in Section 5 and **Table 2** for foundation, bedding, haunching and backfills, are given in **Table 3**.

NOTE 8—Installation of pipe in areas where significant settlement may be anticipated, such as in backfill adjacent to building foundations, and in

sanitary landfills, or in other highly unstable soils, require special engineering and are outside the scope of this practice.

7.2 Trench Bottom—Install foundation and bedding as required by the engineer according to conditions in the trench bottom. Provide a firm, stable, and uniform bedding for the pipe barrel and any protruding features of its joint. Provide a minimum of 4 in. (100 mm) of bedding unless otherwise specified.

7.2.1 Rock and Unyielding Materials—When rock or unyielding material is present in the trench bottom, install a cushion of bedding, of 6 in. (150 mm) minimum thickness, below the bottom of the pipe.

7.2.2 Unstable Trench Bottom—Where the trench bottom is unstable or shows a “quick” tendency, excavate to a depth as required by the engineer and replace with a foundation of Class I or Class II material. Use a suitably graded material where conditions may cause migration of fines and loss of pipe support (see **X1.8**). Place and compact foundation material in accordance with **Table 3**. For severe conditions, the engineer may require a special foundation such as piles or sheeting capped with a concrete mat. Control of quick and unstable trench bottom conditions may be accomplished with the use of appropriate geofabrics.

7.2.3 Localized Loadings—Minimize localized loadings and differential settlement wherever the pipe crosses other utilities or subsurface structures, or whenever there are special foundations such as concrete capped piles or sheeting. Provide a cushion of bedding between the pipe and any such point of localized loading.

7.2.4 Over-Excavation—If the trench bottom is over-excavated below intended grade, fill the over-excavation with compatible foundation or bedding material and compact as recommended in **Table 3**.

7.2.5 Sloughing—If trench sidewalls slough off during any part of excavating or installing the pipe, remove all sloughed and loose material from the trench.

7.3 Location and Alignment—Place pipe and fittings in the trench with the invert conforming to the required elevations, slopes, and alignment. Provide bell holes in pipe bedding, no larger than necessary, in order to ensure uniform pipe support. Fill all voids under the bell by working in bedding material. In special cases where the pipe is to be installed to a curved alignment, maintain angular “joint deflection” (axial alignment) or pipe bending radius, or both, within acceptable design limits.

7.4 Jointing—Comply with manufacturer’s recommendations for assembly of joint components, lubrication, and making of joints. When pipe laying is interrupted, secure piping against movement and seal open ends to prevent the entrance of water, mud, or foreign material.

7.4.1 Elastomeric Seal Joints—Protect gaskets from harmful substances such as dust and grit, solvents, and petroleum-based greases and oils. Do not store gaskets close to electrical equipment that produces ozone. Some gaskets may need to be protected from sunlight (consult the manufacturer). Mark, or verify that pipe ends are marked, to indicate insertion stop position, and ensure that pipe is inserted into pipe or fitting bells to this mark. Push spigot into bell using methods

recommended by the manufacturer, keeping pipe true to line and grade. Protect the end of the pipe while inserting the spigot into the bell and do not use excessive force that may result in over-assembled joints or dislodged gaskets. If full entry to the specified insertion depth is not achieved, disassemble and clean the joint and reassemble. Use only lubricant supplied or recommended for use by the pipe manufacturer. Do not exceed manufacturer’s recommendations for angular “joint deflection” (axial alignment).

7.4.2 Solvent Cement Joints—When making solvent cement joints, follow recommendations of both the pipe and solvent cement manufacturer. If full entry is not achieved, disassemble or remove and replace the joint. Allow freshly made joints to set for the recommended time before moving, burying, or otherwise disturbing the pipe.

7.4.3 Heat Fusion Joints—Make heat fusion joints in conformance with the recommendations of the pipe manufacturer. Pipe may be joined at ground surface and then lowered into position, provided it is supported and handled in a manner that precludes damage.

7.5 Placing and Compacting Pipe Embedment—Place embedment materials by methods that will not disturb or damage the pipe. Work in and tamp the haunching material in the area between the bedding and the underside of the pipe before placing and compacting the remainder of the embedment in the pipe zone. Follow recommendations for compaction given in **Table 2**. Do not permit compaction equipment to contact and damage the pipe. Use compaction equipment and techniques that are compatible with materials used and location in the trench (see **X1.7**). Before using heavy compaction or construction equipment directly over the pipe, place sufficient backfill to prevent damage, excessive deflections, or other disturbance of the pipe. See **7.6** for minimum cover.

7.5.1 Percent Compaction of Embedment—The Soil Class (from **Table 2**) and the required percent compaction of the embedment should be established by the engineer based on an evaluation of specific project conditions (see **X1.6.2**). The information in **Table 3** will provide satisfactory embedment stiffness and is based on achieving an average modulus of soil reaction, E' , of 1000 psi (or an appropriate equivalent constrained modulus, M_s).

7.5.2 Consolidation by Watering—Consolidation of cohesionless material by using water (jetting or puddling) should only be used under controlled conditions when approved by the engineer. At all times conform to the lift thicknesses and the compaction requirements given in **Table 3**.

7.6 Minimum Cover—To preclude damage to the pipe and disturbance to pipe embedment, a minimum depth of backfill above the pipe should be maintained before allowing vehicles or heavy construction equipment to traverse the pipe trench. The minimum depth of cover should be established by the engineer based on an evaluation of specific project conditions. In the absence of an engineering evaluation, the following minimum cover requirements should be used. For embedment materials installed in accordance with **Table 3**, provide cover (that is, depth of backfill above top of pipe) of at least 24 in. (0.6 m) or one pipe diameter (whichever is larger) for Class I embedment, and a cover of at least 36 in. (0.9 m) or one pipe

diameter (whichever is larger) for Class II, III, and IV embedment, before allowing vehicles or construction equipment to traffic the trench surface, and at least 48 in. (1.2 m) of cover before using a hydrohammer for compaction. Do not use hydrohammer-type compactors unless approved by the engineer. Where construction loads may be excessive (for example, cranes, earth moving equipment, etc.), minimum cover shall be increased as determined by the engineer.

7.7 Vertical Risers—Provide support for vertical risers as commonly found at service connections, cleanouts, and drop manholes to preclude vertical or lateral movement. Prevent the direct transfer of thrust due to surface loads and settlement, and ensure adequate support at points of connection to main lines.

7.8 Exposing Pipe for Making Service Line Connections—When excavating for a service line connection, excavate material from above the top of the existing pipe before removing material from the sides of the pipe. Materials and percent compaction of service line embedment should conform to the specifications for the existing line, or with this practice, whichever is more stringent.

NOTE 9—Special construction techniques and considerations are required when more than one pipe is installed in the same or adjacent trenches, to ensure that the integrity of the embedment is maintained.

7.9 Pipe Caps and Plugs—Secure caps and plugs to the pipe to prevent movement and resulting leakage under test and service pressures.

7.10 Manhole Connections—Use flexible water stops, resilient connectors, or other flexible systems approved by the engineer to make watertight connections to manholes and other structures.

7.11 Field Monitoring—Compliance with contract documents with respect to pipe installation, including trench depth, grade, water conditions, foundation, embedment and backfill materials, joints, density of materials in place, and safety, should be monitored by the engineer at a frequency appropriate to project requirements. Leakage testing specifications, while not within the scope of this practice, should be made part of the specifications for plastic pipe installations, when applicable.

8. Inspection, Handling, and Storage

8.1 Inspection—Upon receipt, inspect each shipment of pipe and fittings for conformance to product specifications and contract documents, and check for damage. Reject nonconforming or damaged pipe, and remove from the job. If not returned to supplier, dispose of legally.

8.2 Handling and Storage—Handle and store pipe and fittings in accordance with recommendations of the manufacturer.

9. Keywords

9.1 backfill; bedding; compaction; embedment; haunching; migration; sewer pipe; soil stiffness; thermoplastic; underground installation

APPENDIXES

(Nonmandatory Information)

X1. COMMENTARY

X1.1 Those concerned with the service performance of a buried flexible pipe should understand factors that can affect this performance. Accordingly, key considerations in the design and execution of a satisfactory installation of buried flexible thermoplastic pipe that provided a basis for the development of this practice are given in this Appendix.

X1.2 General—Sub-surface conditions should be adequately investigated prior to construction, in accordance with Practice **D420**, as a basis for establishing requirements for foundation, embedment and backfill materials and construction methods. The type of pipe selected should be suited for the job conditions.

X1.3 Load/Deflection Performance—The thermoplastic pipes considered in this practice are classified as flexible conduits since in carrying load they deform (deflect) to develop support from the surrounding embedment. This interaction of pipe and soil provides a pipe-soil structure capable of supporting earth fills and surface live loads of considerable magnitude. The design, specification and construction of the buried flexible pipe system should recognize that embedment materials

must be selected, placed and compacted so that pipe and soil act in concert to carry the applied loads without excessive strains from deflections or localized pipe wall distortions.

X1.4 Pipe Deflection—Pipe deflection is the diametral change in the pipe-soil system resulting from the process of installing the pipe (construction deflection), static and live loads applied to the pipe (load-induced deflection), and time dependent soil response (deflection lag). Construction and load induced deflections together constitute initial pipe deflection. Additional time dependent deflections are attributed primarily to changes in embedment and in-situ soils, and trench settlement. The sum of initial and time dependent deflections constitutes total deflection.

X1.4.1 Construction Deflection—Construction deflections are induced during the process of installing and embedding flexible pipe, even before significant earth and surface loads are applied. The magnitude of construction deflections depends on such factors as the method and extent of compaction of the embedment materials, type of embedment, water conditions in the trench, pipe stiffness, uniformity of embedment support,

pipe out-of-roundness, and installation workmanship in general. These deflections may exceed the subsequent load-induced deflections. Compaction of the side fill may result in negative vertical deflections (that is, increases in pipe vertical diameter and decreases in horizontal diameter).

X1.4.2 Load-Induced Deflection—Load-induced deflections result from backfill loads and other superimposed loads that are applied after the pipe is embedded. Traditionally, typical soil-structure interaction equations such as the “Iowa Formula”, attributed to Spangler, or other methods have been used to calculate deflections resulting from these loads.

X1.4.3 Initial Deflection—Initial deflection is the deflection in the installed and backfilled pipe. It is the total of construction deflections and load-induced deflections.

X1.4.4 Time Dependent Factors—Time dependent factors include changes in soil stiffness in the pipe embedment zone and native trench soils, as well as loading changes due to trench settlement over time. These changes typically add to initial deflections; the time involved varies from a few days to several years depending on soil types, their placement, and initial compaction. Time dependent factors are traditionally accounted for by adjusting load-induced deflections by a deflection lag factor. Selection of a deflection lag factor is considered in design guides for buried flexible pipe.

X1.4.5 Final Deflection—Final deflection is the total long term deflection of the pipe. It consists of initial deflection adjusted for time dependent factors.

X1.5 Deflection Criteria—Deflection criteria are often set as limits for the design and acceptance of buried flexible pipe installation. Deflection limits for specific pipe systems may be derived from both structural and practical considerations. Structural considerations include pipe cracking, yielding, strength, strain, and local distortion. Practical considerations include such factors as flow requirements, clearance for inspection and cleaning, and maintenance of joint seals. Initial and final deflection limits should be based on available structural properties with suitable factors of safety applied.

NOTE X1.1—Some ASTM standard specifications for thermoplastic pipe, such as Specifications D3034, F679, F714, and F949, provide recommended limits for installed deflections.

NOTE X1.2—Deflections may not be indicative of strain levels arising from local distortions caused by non-uniform embedment stiffness or localized loadings. When local distortions may be significant, the engineer needs to establish methods for controlling and monitoring distortion levels.

X1.6 Deflection Control—Embedment materials should be selected, placed, and compacted so as to minimize total deflections and, in any event, to maintain installed deflections within specific limits. Methods of placement, compaction, and moisture control should be selected based on soil types given in [Table 1](#) and [Table 2](#) and on recommendations given in [Table 3](#). The amount of load-induced deflection is primarily a function of the stiffness of the pipe and soil embedment system. Other factors that are important in obtaining deflection control are outlined below.

X1.6.1 Embedment at Pipe Haunches—Lack of adequate compaction of embedment material in the haunch zone can

result in excessive deflection, since it is this material that supports the vertical loads applied to the pipe. A key objective during installation of flexible thermoplastic pipe (or any pipe) is to work in and compact embedment material under pipe haunches, to ensure complete contact with the pipe bottom, and to fill voids below the pipe.

X1.6.2 Embedment Compaction—Embedment compaction requirements should be determined by the engineer based on deflection limits established for the pipe, pipe stiffness, and installation quality control, as well as the characteristics of the in-situ soil and compactibility characteristics of the embedment materials used. The compaction requirements given in [Table 3](#) are based on attaining an average modulus of soil reaction (E') of 1000 psi⁵ (or an appropriate equivalent constrained modulus, M_s), which relates soil stiffness to soil type and degree of compaction. For particular installations, the project engineer should verify that the percent compaction specified meets performance requirements.

X1.7 Compaction Methods—Achieving desired compaction for specific types of materials depends on the methods used to impart compactive energy. Coarse-grained, clean materials such as crushed stone, gravels, and sand are more readily compacted using vibratory equipment, whereas fine materials with high plasticity require kneading and impact force along with controlled water content to achieve acceptable compaction (see [5.3](#)). In pipe trenches, small, hand-held or walk-behind compactors are required, not only to preclude damage to the pipe, but to ensure thorough compaction in the confined areas around the pipe and along the trench wall. As examples, vibratory plate tampers work well for coarse grained materials of Class I and Class II, whereas hand tampers or air driven hand-held impact rammers are suitable for the fine-grained, plastic groups of Class III and IV. Gas or diesel powered jumping jacks or small, walk-behind vibratory rollers impart both vibratory and kneading or impact force, and hence are suitable for most classes of embedment and backfill material.

X1.8 Migration—When coarse and open-graded material is placed adjacent to a finer material, fines may migrate into the coarser material under the action of hydraulic gradient from ground water flow. Significant hydraulic gradients may arise in the pipeline trench during construction when water levels are being controlled by various pumping or well-pointing methods, or after construction when permeable underdrain or embedment materials act as a “french” drain under high ground water levels. Field experience shows that migration can result in significant loss of pipe support and continuing deflections that may exceed design limits. The gradation and relative size of the embedment and adjacent materials must be compatible in order to minimize migration (see [X1.8.1](#) below). In general, where significant ground water flow is anticipated, avoid placing coarse, open-graded Class I materials above, below, or adjacent to finer materials, unless methods are employed to impede

⁵ Howard, Amster, “Modulus of Soil Reaction Values for Buried Flexible Pipe,” *Journal of Geotechnical Engineering*, ASCE, Vol. 103, No. GT1, 1977.

migration such as the use of an appropriate stone filter or filter fabric along the boundary of the incompatible materials. To guard against loss of pipe support from lateral migration of fines from the trench wall into open-graded embedment materials, it is sufficient to follow the minimum embedment width guidelines in X1.10.

X1.8.1 The following filter gradation criteria may be used to restrict migration of fines into the voids of coarser material under a hydraulic gradient:

X1.8.1.1 $D_{15} / d_{85} < 5$ where D_{15} is the sieve opening size passing 15 % by weight of the coarser material and d_{85} is the sieve opening size passing 85 % by weight of the finer material, and

X1.8.1.2 $D_{50} / d_{50} < 25$ where D_{50} is the sieve opening size passing 50 % by weight of the coarser material and d_{50} is the sieve opening size passing 50 % by weight of the finer material. This criterion need not apply if the coarser material is well-graded (see Test Method D2487).

X1.8.1.3 If the finer material is a fine-grained soil (CL, CH, ML, or MH), then the following criterion may be used in lieu of X1.8.1.1: $D_{15} < 0.02$ in. (0.5 mm) where D_{15} is the sieve opening size passing 15 % by weight of the coarser material.

NOTE X1.3—Materials selected for use based on filter gradation criteria, such as in X1.8.1, should be handled and placed in a manner that will minimize segregation.

X1.9 *Maximum Particle Size*—Limiting particle size to $\frac{3}{4}$ in. (20 mm) or less enhances placement of embedment material for nominal pipe sizes 8 in. (200 mm) through 15 in. (380 mm). For smaller pipe, a particle size of about 10 % of the nominal pipe diameter is recommended.

X1.10 *Embedment Width for Adequate Support*—In certain conditions, a minimum width of embedment material is required to ensure that adequate embedment stiffness is developed to support the pipe. These conditions arise where in-situ lateral soil resistance is negligible, such as in very poor native soils or along highway embankments. Examples of poor native soils include poorly compacted soils with blow counts of five or less, peat, muck, or highly expansive soils. Under these conditions, if the native soil is able to sustain a vertical cut, the minimum embedment width shall be 0.5 pipe diameters on either side of the pipe as shown in Fig. X1.1. Under these conditions, if the native soil cannot sustain a vertical cut or if it is an embankment situation, the minimum embedment width shall be one pipe diameter on either side of the pipe as shown in Fig. X1.2. In either case, the embedment material shall be a Class II granular material or a Class I crushed rock as specified in Section 5 of this standard. If other embedment materials are used, the engineer should establish the minimum embedment width based on an evaluation of parameters such as pipe stiffness, embedment stiffness, nature of in-situ soil, and magnitude of construction and service loads. Regardless of the trench width required for adequate support, the trench must be of sufficient width to allow the proper placement of embedment in accordance with 6.3.

NOTE X1.4—Installation in very poor soil conditions may require additional treatment, for example, soil stabilization or permanent sheeting.

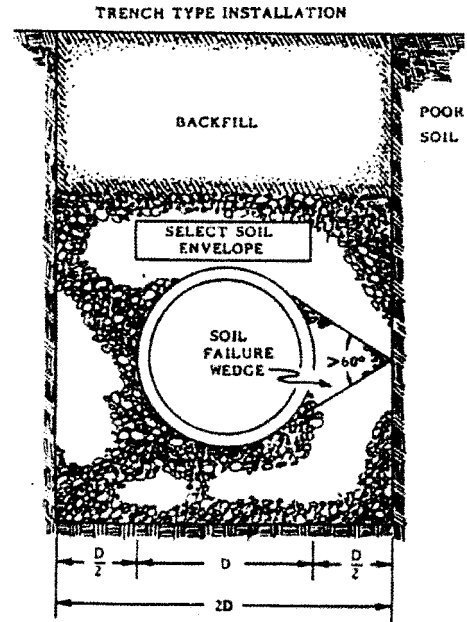


FIG. X1.1 Minimum Embedment Width When Trench and Native Soil Can Sustain a Vertical Cut

NOTE X1.5—The embedment over the top of the pipe shown in Fig. X1.1 and Fig. X1.2 represent minimum cover for impact protection, not for pipe support. Regardless of the minimum cover shown, the requirements of 7.6 must be met.

NOTE X1.6—Refer to X1.6 for backfill material and compaction requirements to control deflection.

X1.11 *Lumps, Clods and Boulders*—Backfill materials should be free of lumps, clods, boulders, frozen matter, and debris. The presence of such material in the embedment may preclude uniform compaction and result in excessive localized deflections.

X1.12 *Other Design and Construction Criteria* —The design and construction of the pipe system should recognize conditions that may induce excessive shear, longitudinal bending, or compression loading in the pipe. Live loads applied by construction and service traffic may result in large, cumulative pipe deflections if the pipe is installed with a low density embedment and shallow cover. Other sources of loads on buried pipes are: freezing and thawing of the ground in the vicinity of the pipe, rising and falling of the ground water table, hydrostatic pressure due to ground water, and localized differential settlement loads occurring next to structures such as manholes and foundations. Where external loads are deemed to be excessive, the pipe should be installed in casing pipe or other load limiting structures.

X1.13 *Deflection Testing*—To ensure specified deflection limits are not exceeded, the engineer may require deflection testing of the pipe using specified measuring devices. To allow for stabilization of the pipe soil system, deflection tests should be performed at least 30 days after installation. However, as a quality control measure, periodic checks of deflection may be made during installation.

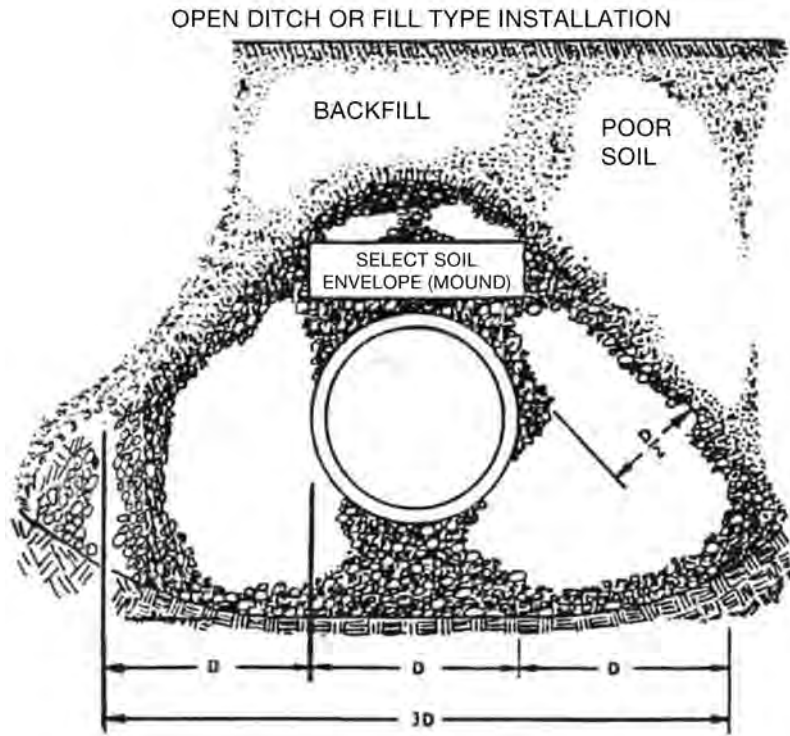


FIG. X1.2 Minimum Embedment Width When Native Soil Can Not Sustain a Vertical Cut or When Installed in the Embankment Condition

X1.13.1 Optional devices for deflection testing include electronic deflectometers, calibrated television or video cameras, or a properly sized “go, no-go” mandrel. Deflection measurements can be made directly with extension rulers or tape measures in lines that permit safe entry. To ensure accurate measurements, clean the lines before testing.

X1.14 *Additional Installation Information*—Supplemental information useful for buried pipe installation can be found in Practice F1668.

X2. RECOMMENDATIONS FOR INCORPORATION IN CONTRACT DOCUMENTS

X2.1 This practice may be incorporated, by referral, into contract documents for a specific project to cover requirements for installation of flexible thermoplastic pipe in sewers and other gravity-flow applications. Application to a particular project should be made by means of a list of supplemental requirements. Suggested modifications to specific sections are listed below (the list is keyed to applicable section numbers of this practice):

X2.2 *Sections 5.1, 5.2, and Table 3*—Further restrictions on use of Classes of embedment and backfill materials.

X2.3 *Section 5*—Specific gradations of embedment materials for resistance to migration.

X2.4 *Section 5.5*—Maximum particle size, if different from Table 2.

X2.5 *Section 6.2*—Restrictions on mode of dewatering; design of underdrains.

X2.6 *Section 6.3*—Requirements on minimum trench width.

X2.7 *Section 6.4*—Restrictions or details for support of trench walls.

X2.8 *Section 7.5*—Specific restrictions on methods of compaction.

X2.9 *Section 7.5.1 and Table 3*—Minimum embedment percent compaction if different from these recommendations; specific compaction requirements for backfill (for example, for pavement subgrade).

X2.10 *Section 7.6*—Minimum cover requirements if different from this paragraph.

X2.11 *Section 7.7*—Detailed requirements for support of vertical risers, standpipes, and stacks to accommodate anticipated relative movements between pipe and such appurtenances. Detailing to accommodate thermal movements, particularly at risers.

X2.12 *Section 7.10*—Detailed requirements for manhole connections.

X2.13 *Section 7.11*—Requirements on methods of testing compaction and leakage.

X2.14 *Section XI.13*—Requirements on deflection and deflection measurements, including method and time of testing.

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (D2321–09) that may impact the use of this standard. (Approved Feb. 1, 2011.)

(1) **7.4.1** was revised to add gasket precautions and to eliminate “homing”.

Committee F17 has identified the location of selected changes to this standard since the last issue (D2321–08) that may impact the use of this standard. (Approved Dec. 15, 2009)

- (1) **2.1** and **X1.14** – Added reference to Specification **F1668**.
- (2) **Section 3** – Added and deleted definitions consistent with other changes, including terms from Terminology **D653**.
- (3) **7.5.1** – Revised wording in terms of “percent compaction;” added reference to constrained modulus, M_s .
- (4) **Fig. 1** – Changed height of initial backfill over pipe to “minimum 6 in (150 mm);” re-defined haunching zone.
- (5) **Table 2** – Corrected percent of fines for Class III and Class IV soils; added Note F.
- (6) **Table 3** – Modified “General Recommendations and Restrictions” for Class II fine sands (SP); modified “Embedment Compaction” requirements for GW and GP soils; modified “Foundation” requirements for Class IV soils.

- (7) **X1.4.1** – Removed reference to **D3839** regarding construction deflection allowances.
- (8) **X1.4.4** – Removed incorrect definition of deflection lag factor.
- (9) **X1.6.2** – Added reference to constrained modulus, M_s .
- (10) **X1.8.1** – Clarified that both **X1.8.1.1** and **X1.8.1.2** are necessary migration criteria.
- (11) **X1.8.1.3** – Expanded the soil groups that fall within this alternate criterion for migration.
- (12) **Note X1.4** – Changed “hydraulic or under consolidated soils” to “very poor soil conditions.”
- (13) Entire standard – Revised wording for “density” and “Proctor” to “percent compaction.”

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).

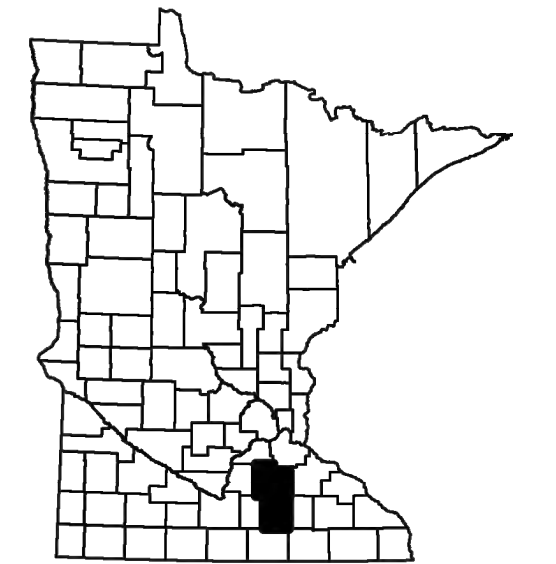
APPENDIX A: Construction Plans

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

CONSTRUCTION PLANS

RICE & STEELE COUNTIES, MINNESOTA

ISG PROJECT # 22-25087



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 TITLE
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
TITLE

SHEET
1
OF 27

SHEET INDEX

- TITLE
- ESTIMATED QUANTITIES AND SCHEDULES
- CONSTRUCTION NOTES
- WATERSHED MAP
- ACCESS ROUTES
- DETAILS
- DETAILS
- DETAILS
- DETAILS
- DETAILS
- DETAILED CULVERT CROSSING
- DETAILED CULVERT CROSSING
- PLAN - PROFILE MAILINE
- PLAN - PROFILE MAILINE
- PLAN - PROFILE MAILINE
- PLAN - PROFILE MAILINE
- SIDE SLOPE FLATTENING GRADING PLAN
- CROSS SECTIONS
- CROSS SECTIONS
- CROSS SECTIONS
- CROSS SECTIONS
- CROSS SECTIONS
- CROSS SECTIONS
- STORMWATER POLLUTION PREVENTION PLAN NOTES
- STORMWATER POLLUTION PREVENTION DETAILS
- SEEDING MAP

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR, LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL, (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
- CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
- WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN, WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
- THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
- THE CONTRACTOR IS TO CONTACT "GOPHER STATE ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-252-1166).

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH RICE AND STEELE COUNTIES' REQUIREMENTS AND MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION, THE STANDARD SPECIFICATIONS FOR SANITARY SEWER, STORM DRAIN AND WATERMAIN AS PROPOSED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA, 2023 EDITION, AND THE CURRENT VERSION OF THE MINNESOTA STATE PLUMBING CODE UNLESS DIRECTED OTHERWISE.

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1996 ADJUSTMENT (NAD83(1996)) ON THE RICE COUNTY COORDINATE SYSTEM, IN U.S. SURVEY FEET.

ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=1102.92

MNDOT GEODETIC STATION "MACKIE" AT INTERSTATE HIGHWAY 35 MILEPOINT 50.45, 76.1 FEET NORTHEAST OF NORTHBOUND INTERSTATE HIGHWAY 35, 55.7 FEET SOUTHWEST OF A RIGHT-OF-WAY FENCE, 1.5 FEET SOUTHWEST OF A WITNESS POST.

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN MARCH/APRIL 2022 BY ISG.

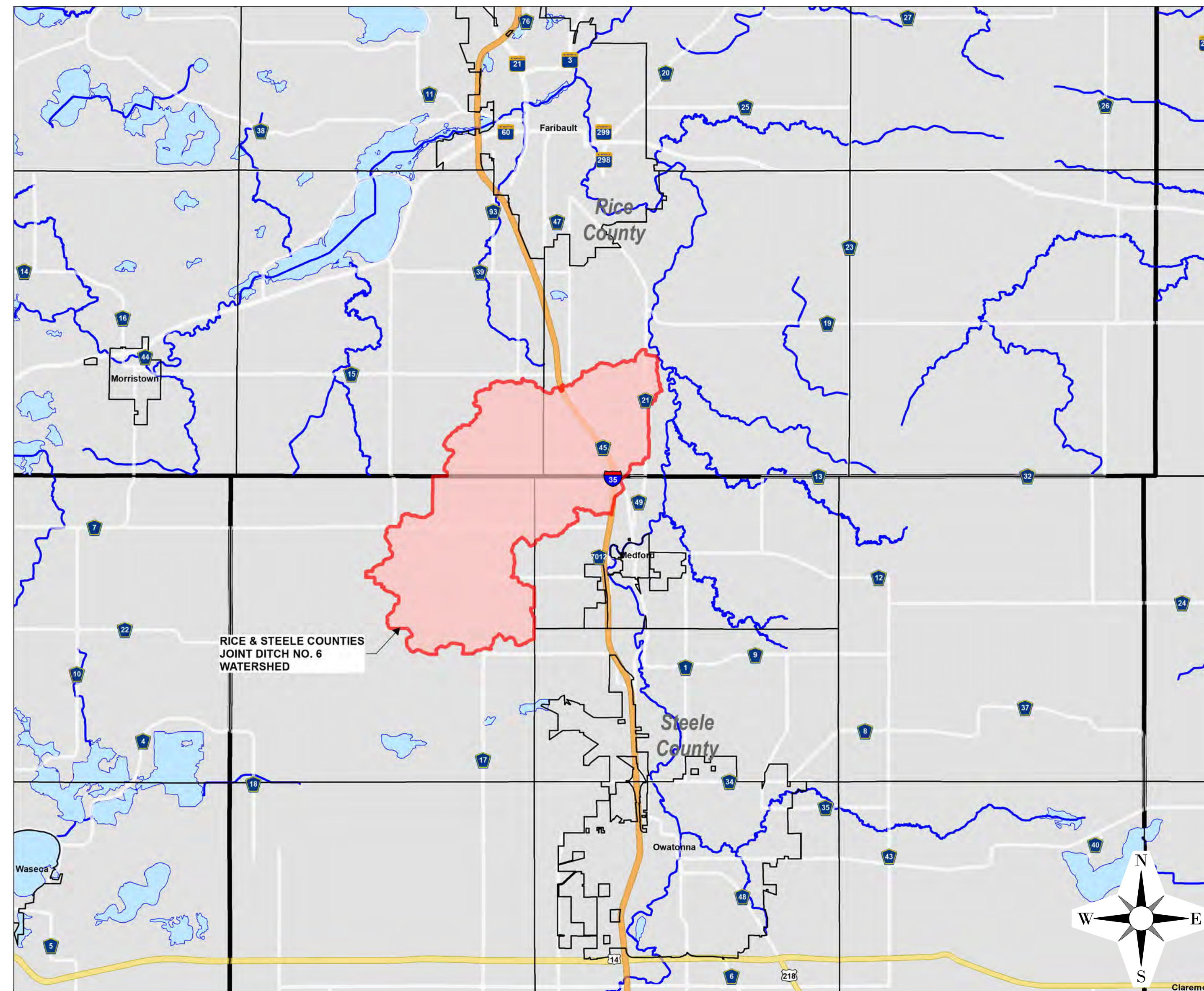
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

PROJECT INDEX:

OWNER:
RICE - STEELE JOINT DRAINAGE AUTHORITY
STEVEN PAHS
RICE COUNTY DRAINAGE MANAGER
1810 30TH STREET NW
FARIBAULT, MN 55021
PH: 507.332.5408

PROJECT ADDRESS / LOCATION:
SECTIONS 31-32 WALLCOTT TWP.
RICE COUNTY, MINNESOTA

MANAGING OFFICE:
ST. LOUIS PARK OFFICE
6465 WAYZATA BOULEVARD
SUITE 970
ST. LOUIS PARK, MN 55426
PHONE: 952.426.0699

PROJECT MANAGER: BAILEY BOCCHINO
EMAIL: BAILEY.BOCCHINO@ISGINC.COM



HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1996 ADJUSTMENT (NAD83(1996)) ON THE RICE COUNTY COORDINATE SYSTEM, IN U.S. SURVEY FEET.

ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.



TOTAL ESTIMATED QUANTITIES			
Item Code	Item	Unit	Estimated Quantity
01.7113.1000.01	MOBILIZATION	LS	1
31.2311.1000.03	CLEANING 13.5' X 12' RC BOX CULVERT	LF	395
31.2316.1000.07	COMMON EXCAVATION (P) (EV)	CY	8699
31.2316.1000.07	COMMON BORROW (P) (CV)	CY	257
31.2316.1000.07	TOP SOIL STRIP & PLACE SPOILS (EV)	CY	7425
31.2500.1000.03	INSTALL BIO-ROLL	LF	405
31.3700.1000.07	CLASS III RIPRAP WITH GEOTEXTILE FABRIC	CY	1453
32.9219.1000.04	SEED MIX 25-142 W/MNDOT CATEGORY 20 EROSION CONTROL BLANKET	SY	595
32.9219.1000.10	16.5' BUFFER STRIP SEEDING (SEED MIX: MNDOT SEED MIX 25-142 WITH TYPE 3 MULCH)	AC	1.71
32.9219.1000.10	SIDESLOPE SEEDING (SEED MIX: MNDOT SEED MIX 25-142 WITH CATEGORY 20 EROSION CONTROL BLANKET)	SY	12100
33.0513.1000.02	INSTALL 12-INCH ASI RISER ASSEMBLY W/TRASH GRATE	EA	2
33.0513.1000.02	INSTALL 10-INCH ASI RISER ASSEMBLY W/TRASH GRATE	EA	1
33.0513.1000.02	INSTALL 12-INCH ASI OUTLET ASSEMBLY	EA	2
33.0513.1000.02	INSTALL 10-INCH ASI OUTLET ASSEMBLY	CY	1
33.4510.1000.02	24-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1
33.4510.1000.02	8-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	2
33.4520.1000.02	10-FOOT x 6-FOOT RC BOX CULVERT END SECTION	EA	2
33.4520.1000.02	REMOVE METAL CULVERTS	EA	6
33.4520.1000.02	REMOVE FIELD CROSSING	EA	2
33.4520.1000.03	10-FOOT x 6-FOOT RC BOX CULVERT	LF	42
33.4520.1000.03	96-INCH CLASS III RCP PIPE	LF	48
33.4520.1000.07	GRANULAR BEDDING MATERIAL	CY	55
34.0100.1000.02	OPEN CUT & RESTORE FIELD CROSSING	EA	1

TILE OUTLET REPAIR SCHEDULE				
LOCATION	STATION	SIDE OF DITCH	OUTLET SIZE	EXISTING OUTLET MATERIAL
Main	108+65	East	6"	PVC
Main	124+90	North	8"	HDPE
Main	158+53	North	24"	CMP
Main	158+53	South	8"	HDPE

RIPRAP SCHEDULE										
LOCATION			Upstream				Downstream			
BRANCH (LOCATION)	CROSSING	STATION	MnDOT RIPRAP Size	Length (FT)	Width (FT)	Volume (CY)	MnDOT RIPRAP Size	Length (FT)	Width (FT)	Volume (CY)
MAIN	NEW FIELD CROSSING	115+75	Class III	15	37	60	Class III	40	37	110
MAIN	FIELD CROSSING	158+10	Class III	15	29	38	Class III	32	29	68

ALTERNATIVE SIDE INLET (ASI)								
Description			Bid Item			Bid Item		
ID	BRANCH (LOCATION)	STATION	INTAKE TYPE	RISER SIZE (in)	RISER DEPTH (LF)	OUTLET SIZE (in)	OUTLET LENGTH (LF)	OUTLET GRADE (%)
1	MAIN (SOUTH)	113+90	TRASH GRATE	12	8	12	65	2.0
2	MAIN (NORTH)	112+50	TRASH GRATE	12	10	12	100	2.0
3	MAIN (SOUTH)	125+00	TRASH GRATE	10	8	10	60	2.00

EARTHWORK NORTH SIDE OF DITCH STA. 113+00 TO 128+00			
SITE BALANCE:		Embankment	Topsoil
Common Excavation	+	3174 CY	1127 CY
Fill Material Needed	-	3435 CY	315 CY
Topsoil Strip (Fill Area)	+		3864 CY
Common Excavation for Topsoil Redress	+	643 CY	
Topsoil Redress(Fill Area)	-		3864 CY
Topsoil Redress(Side Slope Flattening)	-		643 CY
Common Excavation Shrink	-	382 CY	169 CY
Other	+/-	CY	0 CY
TOTAL:		0 CY	0 CY

Note: A positive total indicates excess material is left after grading operations are complete. A negative total indicates a shortage of material exists. Additional calculations may be needed to determine if an adequate amount of suitable fill material is available to achieve desired grading.

EARTHWORK SUMMARY:	
COMMON EXCAVATION (P)(EV):	4944 CY
TOPSOIL STRIP INPLACE OF SPOILS (EV):	3864 CY
A SHRINKAGE FACTOR OF 10% (EMBANKMENT) & 15% (TOPSOIL) WERE APPLIED TO ALL EXCAVATED MATERIAL WHEN DETERMINING SITE BALANCE.	
NO WARRANTY IS MADE OR IMPLIED AS TO THE ACCURACY, SUFFICIENCY, OR RELIABILITY OF THE SHRINKAGE FACTORS.	
18" OF TOPSOIL WAS ASSUMED IN ALL AREAS. REDRESSING OF DITCH SIDE SLOPE AREAS SHALL HAVE MINIMUM OF 4" OF TOPSOIL. TOPSOIL REDRESS IN AREA'S OF FILL SHALL HAVE MINIMUM OF 18", UNLESS APPROVED BY THE ENGINEER.	
THE SITE BALANCE PROVIDED ABOVE IS FOR INFORMATIONAL PURPOSES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL QUANTITIES PRIOR TO SUBMITTING A BID FOR THE PROJECT.	

EARTHWORK SOUTH SIDE OF DITCH STA. 107+00 TO 128+00			
SITE BALANCE:		Embankment	Topsoil
Common Excavation	+	2082 CY	987 CY
Fill Material Needed	-	2446 CY	203 CY
Topsoil Strip (Fill Area)	+		3561 CY
Common Excavation for Topsoil Redress	+	636 CY	
Topsoil Redress(Fill Area)	-		3561 CY
Topsoil Redress(Side Slope Flattening)	-		636 CY
Common Excavation Shrink	-	272 CY	148 CY
Other	+/-	CY	0 CY
TOTAL:		0 CY	0 CY

Note: A positive total indicates excess material is left after grading operations are complete. A negative total indicates a shortage of material exists. Additional calculations may be needed to determine if an adequate amount of suitable fill material is available to achieve desired grading.

EARTHWORK SUMMARY:	
COMMON EXCAVATION (P)(EV):	3705 CY
TOPSOIL STRIP INPLACE OF SPOILS (EV):	3561 CY
A SHRINKAGE FACTOR OF 10% (EMBANKMENT) & 15% (TOPSOIL) WERE APPLIED TO ALL EXCAVATED MATERIAL WHEN DETERMINING SITE BALANCE.	
NO WARRANTY IS MADE OR IMPLIED AS TO THE ACCURACY, SUFFICIENCY, OR RELIABILITY OF THE SHRINKAGE FACTORS.	
18" OF TOPSOIL WAS ASSUMED IN ALL AREAS. REDRESSING OF DITCH SIDE SLOPE AREAS SHALL HAVE MINIMUM OF 4" OF TOPSOIL. TOPSOIL REDRESS IN AREA'S OF FILL SHALL HAVE MINIMUM OF 18", UNLESS APPROVED BY THE ENGINEER.	
THE SITE BALANCE PROVIDED ABOVE IS FOR INFORMATIONAL PURPOSES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL QUANTITIES PRIOR TO SUBMITTING A BID FOR THE PROJECT.	

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 DETAILS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
ESTIMATED QUANTITIES AND SCHEDULES

GENERAL PROJECT NOTES:

1. DURING CONSTRUCTION, CONTRACTOR SHALL MAINTAIN A DRAINAGE OUTLET FOR THE ENTIRE JD 6 PROJECT AREA.
2. ALL PIPE DIMENSIONS REFERENCED IN THE PLANS REFER TO THE INSIDE DIAMETER.
3. RODENT GUARDS SHALL BE INSTALLED ON ALL OUTLETS 18" AND SMALLER. (INCIDENTAL TO RESPECTIVE BID ITEMS).
4. ALL ROAD SIGNAGE, COORDINATION, AND TRAFFIC CONTROL SIGNAGE SHALL BE INCIDENTAL AND SHALL CONFORM TO LOCAL ROAD AUTHORITY PERMITS AND REGULATIONS.
5. THE CONTRACTOR SHALL SUBMIT A WINTER CONSTRUCTION PLAN FOR SITE STABILIZATION, EROSION PREVENTION, AND SEDIMENT CONTROL IF THE PROJECT IS NOT COMPLETED BY OCTOBER 15 OF THE GIVEN CONSTRUCTION SEASON, UNLESS APPROVED BY THE ENGINEER. THE PLAN SHALL BE DEVELOPED TO SPECIFICALLY ADDRESS SHUTDOWN PROCEDURES OR ACTIVE CONSTRUCTION PLANS.
6. ALL DEWATERING FOR THE PROJECT IS INCIDENTAL.
7. PRODUCT MATERIAL SHALL BE AS SPECIFIED IN THE PLANS. IF NO SPECIFIC MATERIAL IS CALLED OUT, MATERIAL SHALL CONFORM TO THE APPROVED PRODUCT LIST IN THE APPROPRIATE SPECIFICATION.
8. ALL EFFORTS SHALL BE MADE DURING CONSTRUCTION TO SEPARATE SOIL TYPES. BACKFILL SHALL BE COMPACTED PRIOR TO PLACEMENT OF TOPSOIL, EXCEPT THE TOP TWO (2) FEET, FOR WHICH COMPACTION SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 18", OR UNIFORM TO THE TOPSOIL DEPTH OF THE SURROUNDING AREA UNLESS SPECIFIED ELSEWHERE IN THE PLANS. EXCAVATED SPOILS SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP AND SEPARATED. NO TOPSOIL SHALL BE PLACED IN THE TRENCH BELOW 2' FROM EXISTING GROUND UNLESS APPROVED BY THE ENGINEER.
9. ALL SPOIL LEVELING, GRADING, AND RESTORATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE TO THE CONTRACT DOCUMENTS AND SHALL BE INCIDENTAL TO THE WORK UNLESS OTHERWISE SPECIFIED.
10. AGGREGATE SURFACE SHALL BE INCIDENTAL TO CROSSING OR ROAD RESTORATION.
11. RIPRAP QUANTITIES ARE ESTIMATED. ADDITIONAL QUANTITY MAY BE REQUIRED BY THE ENGINEER. ALL RIPRAP QUANTITIES SHALL BE PAID BY THE CUBIC YARD INSTALLED, UNLESS RIPRAP IS INCIDENTAL TO A SEPARATE PAY ITEM. ALL EXCAVATION AND GEOTEXTILE FABRIC SHALL BE INCIDENTAL TO RESPECTIVE BID ITEM.
12. ALL WORK SHALL BE DONE IN 2,500 LF SECTIONS, UNLESS APPROVED OF BY THE ENGINEER. PRIOR TO COMMENCING ON A NEW SECTION, ALL WORK IN THE PREVIOUS SECTION MUST BE COMPLETED IN ADHERENCE WITH THE CONTRACT DOCUMENTS. THE ENGINEER RESERVES THE RIGHT TO CEASE OPERATIONS AND/OR WITHHOLD PAYMENT UNTIL COMPLIANCE HAS BEEN ACHIEVED.
13. EXISTING TILES THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED AT NO COST TO THE PROJECT, UNLESS OTHERWISE SPECIFIED.
14. ALL SIGNS AND MARKERS SHALL BE PROTECTED OR REMOVED AND REINSTALLED AT NO ADDITIONAL COST TO THE PROJECT, UNLESS OTHERWISE SPECIFIED. THE ENGINEER SHALL BE NOTIFIED OF ANY SIGNS OR MARKERS IN POOR CONDITION PRIOR TO REMOVAL.
15. THE DRAINAGE AUTHORITY TAKES NO AUTHORITY OVER OR RESPONSIBILITY FOR ANY AND ALL PRIVATE TILE SHOWN ON THESE PLANS. PRIVATE TILE LOCATIONS HAVE BEEN SUPPLIED BY LANDOWNERS FOR USE BY THE CONTRACTOR.
16. THE CONTRACTOR SHALL PAY ALL DAMAGES OUTSIDE OF THE AGREED UPON EASEMENT IN AN AMOUNT OF \$1,200 PER ACRE OF DISTURBANCE, AS MEASURED BY THE ENGINEER.

UTILITY NOTES:

1. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-22, ENTITLED, "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

GENERAL OPEN DITCH NOTES:

1. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITY TO WITHIN A 100-FOOT WIDE AREA ALONG TOP OF DITCH ALIGNMENTS. DISTURBANCE THROUGH ROAD CROSSINGS, ROAD DITCHES, AND GRASS BUFFERS SHALL BE LIMITED TO THE TRENCH WIDTH NECESSARY FOR SAFE CONSTRUCTION PRACTICES.
2. A 16.5-FOOT GRASS STRIP SHALL BE ESTABLISHED IN AREAS THAT DO NOT HAVE AN EXISTING 16.5-FOOT GRASS STRIP. AREA WITH EXTENDED BUFFERS SHALL BE RE-ESTABLISHED TO CONDITION PRIOR TO CONSTRUCTION. FINAL SEEDING SHALL OCCUR AFTER ALL WORK HAS BEEN COMPLETED IN THE AREA AND SHALL COMPLY WITH THE CONTRACT DOCUMENTS. TEMPORARY SEEDING MAY BE REQUIRED AND SHALL BE INCIDENTAL.
3. DITCH SIDE SLOPE FLATTENING SHALL BE PERFORMED ON BOTH SIDES OF THE DITCH. THE DITCH SPOILS SHALL BE PLACED AND LEVELED (INCIDENTAL) WITHIN SPECIFIED AREAS ON THE PLANS AND CROSS SECTIONS.
4. PLACE ALL SPOILS FROM DITCH SIDE SLOPE FLATTENING IN DESIGNATED SPOIL AREAS IDENTIFIED ON PLANS, UNLESS OTHERWISE DETERMINED BY THE ENGINEER. SPOIL LEVELING/GRADING IS INCIDENTAL TO DITCH SIDE SLOPE FLATTENING UNLESS OTHERWISE SPECIFIED. CONTRACTOR MAY REMOVE CLAY MATERIALS FROM SITE FOR OTHER USE AT NO ADDITIONAL COST TO THE PROJECT IF APPROVED BY THE ENGINEER. ALL TOPSOIL SHALL REMAIN ON SITE.
5. TOPSOIL IN TOPSOIL STRIP AREAS DESIGNATED ON THE PLANS SHALL BE STRIPPED PRIOR TO THE PLACEMENT OF FILL MATERIAL FROM DITCH EXCAVATION. TOPSOIL STRIP AREAS MAY ADJUST BASED ON ACTUAL TOPSOIL THICKNESS. RECLAIMING AND LEVELING OF THE TOPSOIL ON TOP OF THE SPOILS SHALL BE INCIDENTAL TO TOPSOIL STRIPPING. TOPSOIL STRIPPING SHALL BE PAID FOR BY THE PLANNED CUBIC YARD. SEE GRADING CALCULATIONS AND SPECIFICATIONS FOR FURTHER CLARIFICATION. MINIMUM OF 4" OF TOPSOIL SHALL BE PLACED ON DITCH SIDE SLOPES UNLESS APPROVED BY THE ENGINEER (INCIDENTAL TO DITCH WIDENING.)
6. SHAPING AROUND SIDE INLETS, ASIs, ASIROS, AND CULVERT INLETS SHALL BE INCIDENTAL TO THEIR RESPECTIVE PAY ITEMS.
7. ONLY LABELED TILE OUTLETS AND FIELD INTAKES SHALL BE REPAIRED OR ARMORED. UNLESS SPECIFICALLY NOTED, HDPE OR PVC SHALL BE THE ONLY ACCEPTABLE MATERIAL FOR ALL TILE REPAIRS (SEE DETAILS).
8. MISCELLANEOUS TREE CLEARING SHALL BE INCIDENTAL TO DITCH PAY ITEM(S), UNLESS SPECIFICALLY CALLED OUT IN THE PLANS.
9. DITCH BANKS SHALL BE SEEDED WITHIN TWO (2) DAYS OF FINISHED EXCAVATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

GENERAL CULVERT NOTES:

1. ALL CULVERTS SHALL BE CONSTRUCTED WITH CLASS III RCP ONLY, UNLESS OTHERWISE SPECIFIED ON PLANS OR APPROVED BY THE ENGINEER.
2. ALL PIPE SECTIONS SHALL BE TIED TOGETHER, WATERTIGHT, GASKETED, AND TONGUE AND GROOVE DESIGN CONFORMING TO MnDOT 3006G. ALL JOINTS SHALL BE WRAPPED IN GEOTEXTILE FABRIC.
3. WHEN A CULVERT SECTION IS TO BE REINSTALLED, THE CONTRACTOR MUST NOTIFY THE ENGINEER OF ANY CULVERT SECTIONS DEEMED NOT SALVAGEABLE PRIOR TO REMOVAL AND SHALL BE ADDRESSED BEFORE CULVERT WORK IS DONE.
4. THE CONTRACTOR SHALL VERIFY PROPER POSITIONING OF THE CULVERT PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF THE CULVERT POSITIONING IS NOT COMPATIBLE WITH THE FLOW OF THE DITCH WHEN STAKING IS COMPLETED, THE ENGINEER SHALL BE NOTIFIED.

ABBREVIATIONS

AC	ACRE	GA	GAUGE	PP	POLYPROPYLENE
ADD	ADDENDUM	GAL	GALLON	PSI	POUNDS PER SQUARE INCH
AGG	AGGREGATE	GPM	GALLONS PER MINUTE	PVC	POLYVINYL CHLORIDE
APPROX	APPROXIMATE	HDPE	HIGH DENSITY POLYETHYLENE	PVMT	PAVEMENT
BIT	BITUMINOUS	HORIZ	HORIZONTAL	QTY	QUANTITY
CAD	COMPUTER-AIDED DESIGN	HR	HOUR	RCP	REINFORCED CONCRETE PIPE
CFS	CUBIC FEET PER SECOND	HWL	HIGH WATER LEVEL	REBAR	REINFORCING BAR
CF	CUBIC FOOT	HWY	HIGHWAY	REM	REMOVE
CL	CENTERLINE	HYD	HYDRANT	ROW	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE	I	INVERT	R/W	RIGHT OF WAY
CONC	CONCRETE	ID	INSIDE DIAMETER	SCH	SCHEDULE
CONST	CONSTRUCTION	IN	INCH	SF	SQUARE FOOT
CONT	CONTINUOUS	INV	INVERT	SPEC	SPECIFICATION
CR	COUNTY ROAD	LF	LINEAR FEET	SQ	SQUARE
CSAH	COUNTY STATE AID	LIN	LINEAR	STA	STATION
	HIGHWAY	LS	LUMP SUM	SY	SQUARE YARD
CY	CUBIC YARD	MAX	MAXIMUM	TEMP	TEMPORARY
DI	DROP INTAKE	MH	MANHOLE	THRU	THROUGH
DIA	DIAMETER	MIN	MINIMUM	TRANS	TRANSFORMER
DIM	DIMENSION	MISC	MISCELLANEOUS	TV	TELEVISION
EA	EACH	NO	NUMBER	TYP	TYPICAL
ELEC	ELECTRICAL	NTS	NOT TO SCALE	UT	UTILITY, UNDERGROUND
ELEV	ELEVATION	NWL	NORMAL WATER LEVEL	UT	TELEPHONE
EOF	EMERGENCY OVERFLOW	OC	ON CENTER	VCP	VITRIFIED CLAY PIPE
EQ	EQUAL	OCEW	ON CENTER EACH WAY	W/O	WITHOUT
EX	EXISTING	OH	OVERHEAD	W/	WITH
FDN	FOUNDATION	OHWL	ORDINARY HIGH WATER	YD	YARD
FPM	FEET PER MINUTE	OZ	OUNCE	YR	YEAR
FPS	FEET PER SECOND	PERF	PERFORATED		
FT	FOOT, FEET	PL	PROPERTY LINE		



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

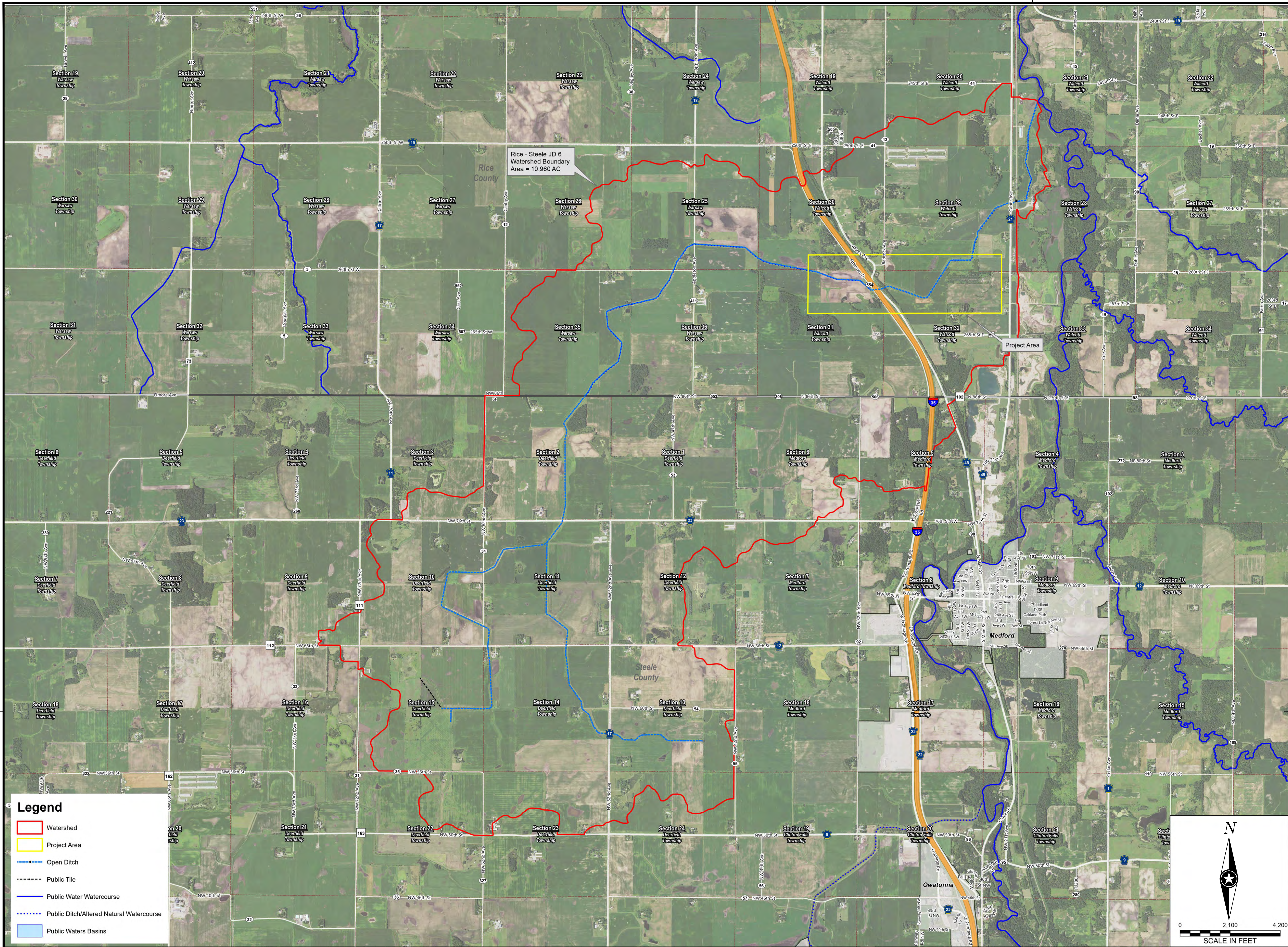
RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 DETAILS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

CONSTRUCTION NOTES

SHEET **3** OF 27



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO.: 59968

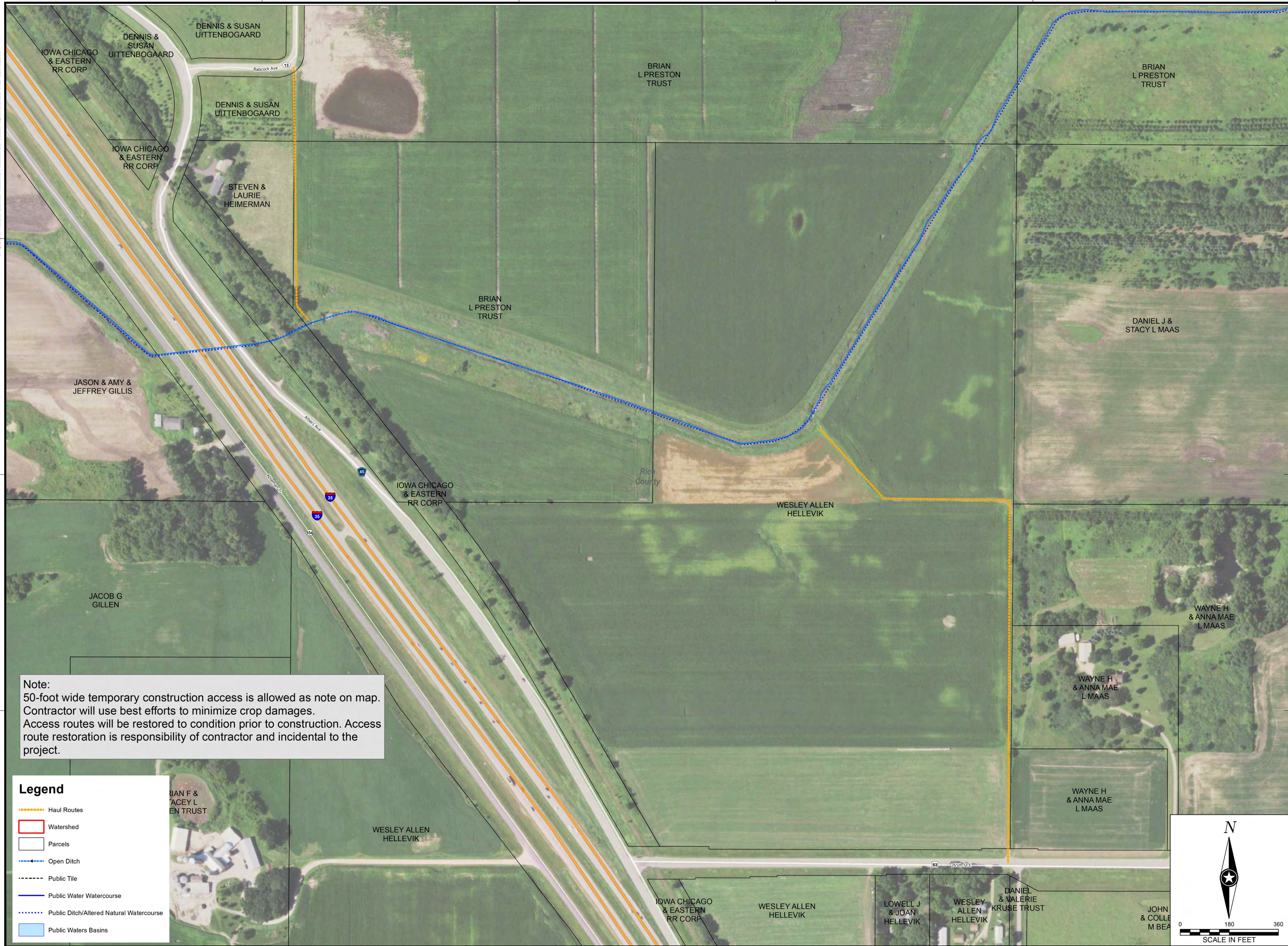
THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 WATERSHED
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
WATERSHED MAP



Note:
 50-foot wide temporary construction access is allowed as note on map. Contractor will use best efforts to minimize crop damages. Access routes will be restored to condition prior to construction. Access route restoration is responsibility of contractor and incidental to the project.

Legend

- - - - - Haul Routes
- Watershed
- Parcels
- - - - - Open Ditch
- - - - - Public Tile
- Public Water Watercourse
- - - - - Public Ditch/Altered Natural Watercourse
- Public Waters Basins

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 BAILEY BOCCHINO
Bailey Bocchino
 DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

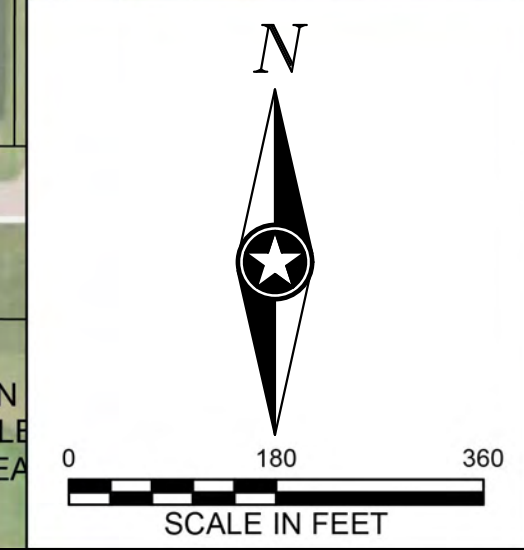
PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

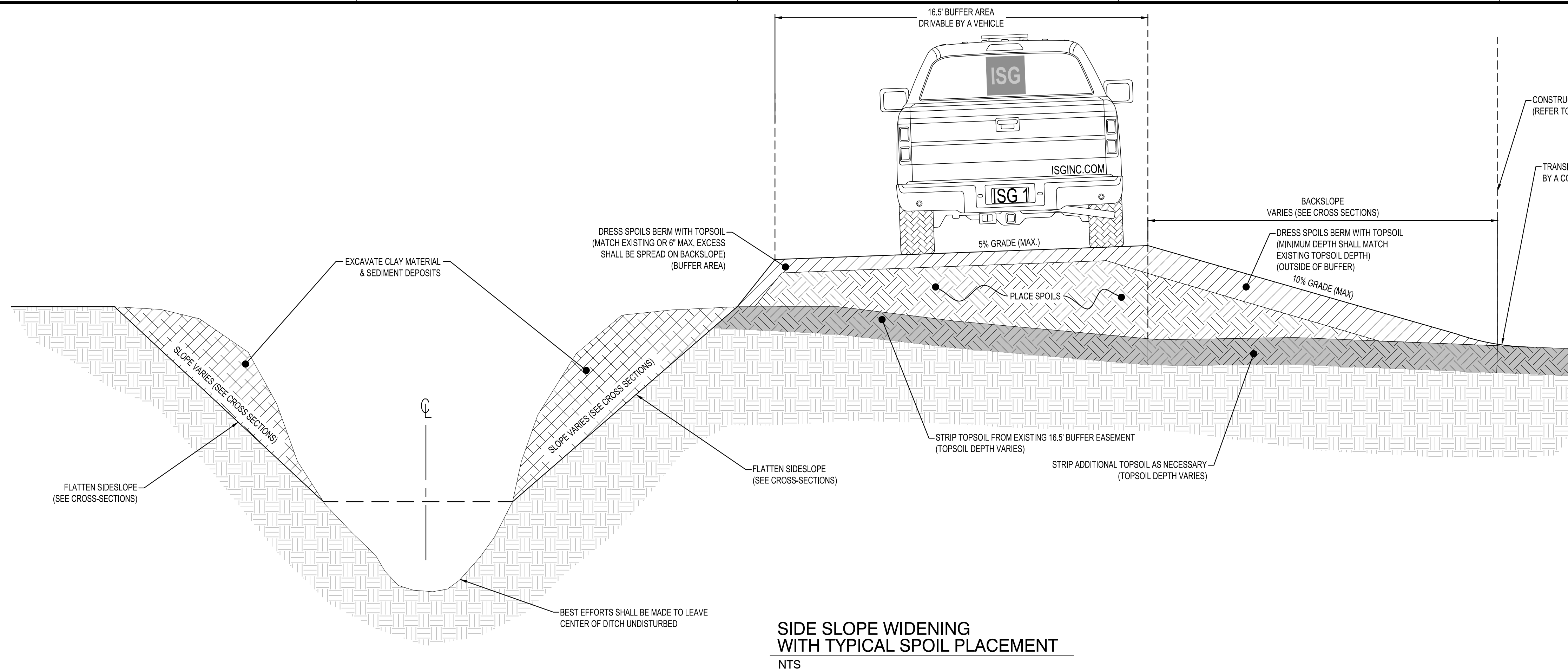
REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087
 FILE NAME 25087 WATERSHED
 DRAWN BY KJH
 DESIGNED BY BPB
 REVIEWED BY BPB
 ORIGINAL ISSUE DATE --/--/--
 CLIENT PROJECT NO. -

TITLE
ACCESS ROUTES

SHEET
5 OF 27





- NOTES:**
- REFER TO PLANS AND DETAILS FOR CLEANING, DEEPENING, WIDENING, AND NEW CONSTRUCTION.
 - SPOIL PLACEMENT AND LEVELING SHALL BE INCIDENTAL TO APPROPRIATE DITCH EXCAVATION BID ITEM.
 - TOPSOIL STRIPING SHALL BE PAID FOR BY THE CY, REDRESSING SHALL BE INCIDENTAL TO THE STRIPING. REFER TO PLAN FOR TOPSOIL STRIP AND DEPTHS.
 - DO NOT OVER EXCAVATE DITCH BOTTOM OR SIDE SLOPES WHEN CLEANING SEDIMENT.
 - TYPICAL DETAIL- REFER TO CROSS-SECTIONS FOR DIMENSIONS.
 - BACKSLOPE SHALL BE DRIVABLE BY A COMBINE WITH AN ATTACHMENT.
 - EXISTING AREAS WITH TOPSOIL ON BANKS SHALL BE REUSED TO DRESS SIDE SLOPES AS APPROVED BY ENGINEER IN FIELD.
 - IF NO TOPSOIL EXISTS WITHIN 16.5' BUFFER EASEMENT, TOPSOIL SHALL BE STRIPPED OUTSIDE OF EASEMENT TO FULL DEPTH OF TOPSOIL.
 - TYPICAL DITCH WIDENING INCLUDES EXCAVATION OF SEDIMENT DEPOSITS AND CLAY MATERIAL, WHICH INCLUDES RESLOPING OF THE DITCH BANK IF NECESSARY. THE WORK WILL BE PAID FOR BY THE CUBIC YARD.
 - DITCH SPOILS SHALL BE PLACED IN THE DESIGNATED FILL AREAS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 - TYPICAL DETAIL- REFER TO CROSS-SECTIONS FOR DIMENSIONS.
 - DITCH BANK SEEDING MUST OCCUR WITHIN 2 DAYS OF CONSTRUCTION.
 - BEST EFFORTS SHALL BE MADE TO LEAVE CENTER OF DITCH UNDISTURBED.

SIDE SLOPE WIDENING WITH TYPICAL SPOIL PLACEMENT
NTS

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
BAILEY BOCCCHINO
Bailey Bocchino
DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

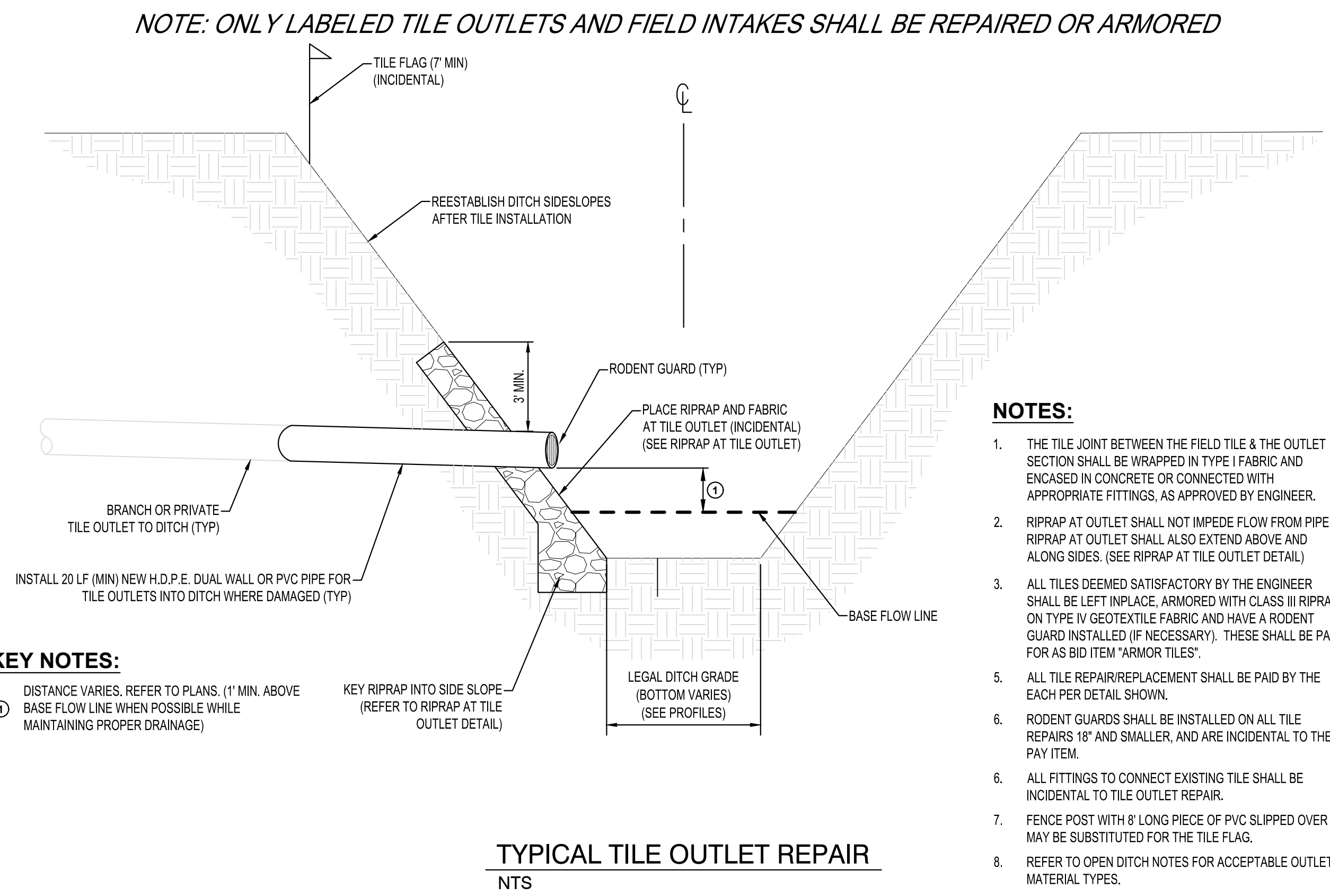
PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087
FILE NAME 25087 DETAILS
DRAWN BY KJH
DESIGNED BY BPB
REVIEWED BY BPB
ORIGINAL ISSUE DATE --/--/--
CLIENT PROJECT NO. -

TITLE
DETAILS

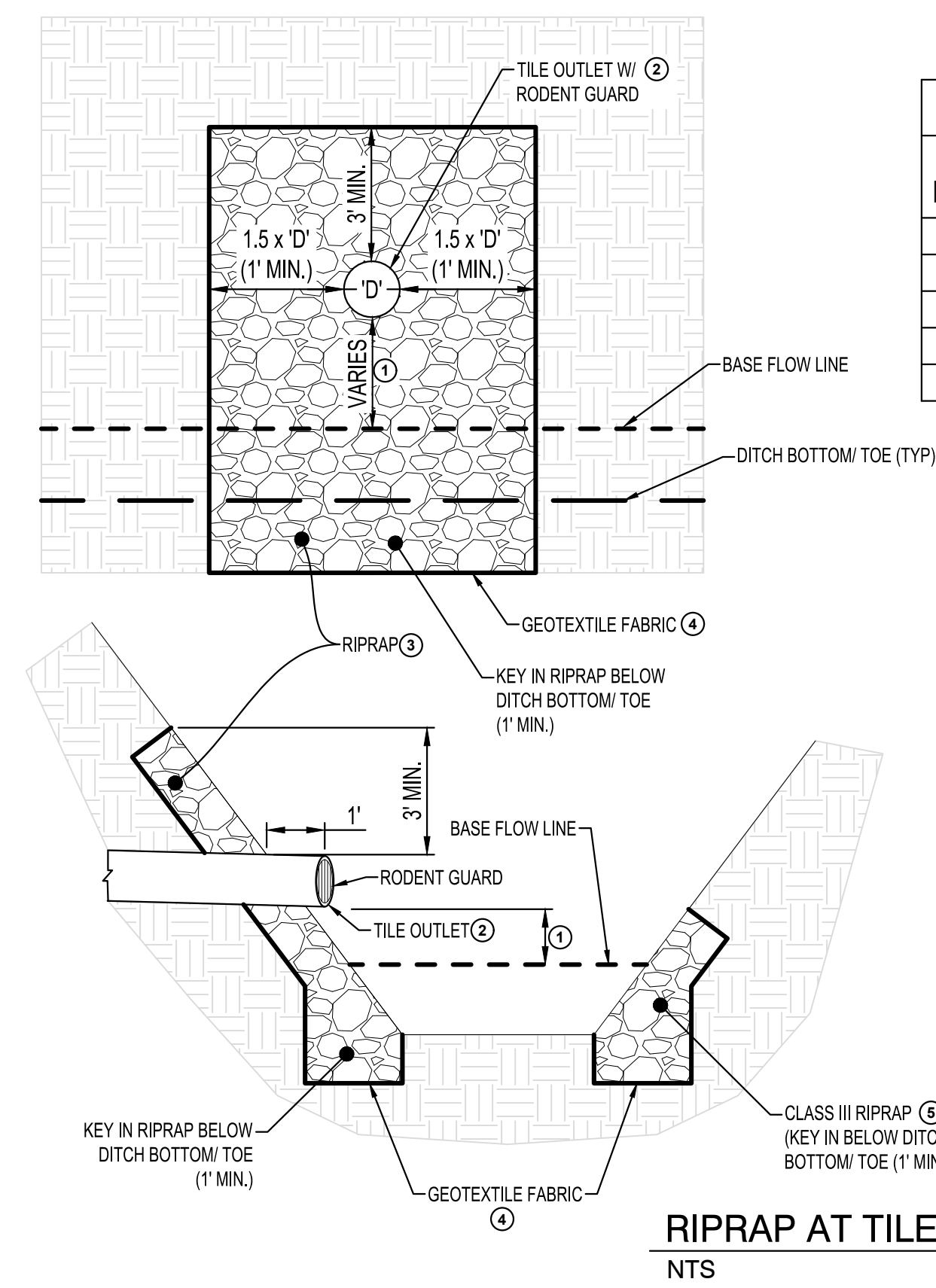
SHEET
6 OF 27



- KEY NOTES:**
- DISTANCE VARIES. REFER TO PLANS. (1" MIN. ABOVE BASE FLOW LINE WHEN POSSIBLE WHILE MAINTAINING PROPER DRAINAGE)

- NOTES:**
- THE TILE JOINT BETWEEN THE FIELD TILE & THE OUTLET SECTION SHALL BE WRAPPED IN TYPE I FABRIC AND ENCASED IN CONCRETE OR CONNECTED WITH APPROPRIATE FITTINGS, AS APPROVED BY ENGINEER.
 - RIPRAP AT OUTLET SHALL NOT IMPEDE FLOW FROM PIPE. RIPRAP AT OUTLET SHALL ALSO EXTEND ABOVE AND ALONG SIDES. (SEE RIPRAP AT TILE OUTLET DETAIL)
 - ALL TILES DEEMED SATISFACTORY BY THE ENGINEER SHALL BE LEFT IN PLACE, ARMORED WITH CLASS III RIPRAP ON TYPE IV GEOTEXTILE FABRIC AND HAVE A RODENT GUARD INSTALLED (IF NECESSARY). THESE SHALL BE PAID FOR AS BID ITEM "ARMOR TILES".
 - ALL TILE REPAIR/REPLACEMENT SHALL BE PAID BY THE EACH PER DETAIL SHOWN.
 - RODENT GUARDS SHALL BE INSTALLED ON ALL TILE REPAIRS 18" AND SMALLER, AND ARE INCIDENTAL TO THE PAY ITEM.
 - ALL FITTINGS TO CONNECT EXISTING TILE SHALL BE INCIDENTAL TO TILE OUTLET REPAIR.
 - FENCE POST WITH 8' LONG PIECE OF PVC SLIPPED OVER IT MAY BE SUBSTITUTED FOR THE TILE FLAG.
 - REFER TO OPEN DITCH NOTES FOR ACCEPTABLE OUTLET MATERIAL TYPES.
 - SEEDING MUST OCCUR WITHIN 2 DAYS OF CONSTRUCTION. PAID BY SEEDING QUANTITY.

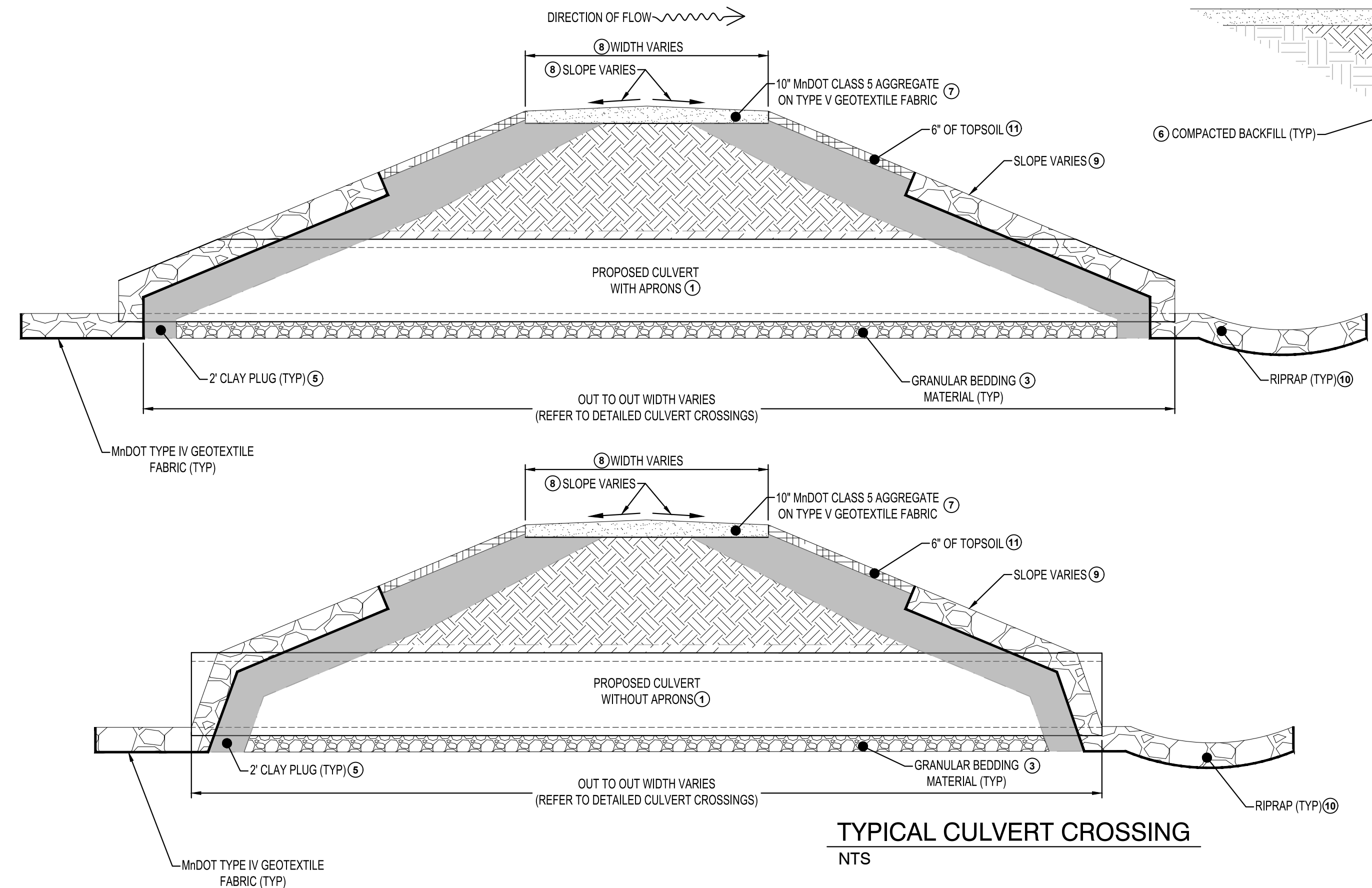
TYPICAL TILE OUTLET REPAIR
NTS



DIMENSIONS	
NOMINAL PIPE DIA ('D')	RIPRAP
UNDER 12"	4 CY
12"-15"	6 CY
18" TO 36"	9 CY
42" TO 60"	10 CY
ABOVE 60"	12 CY

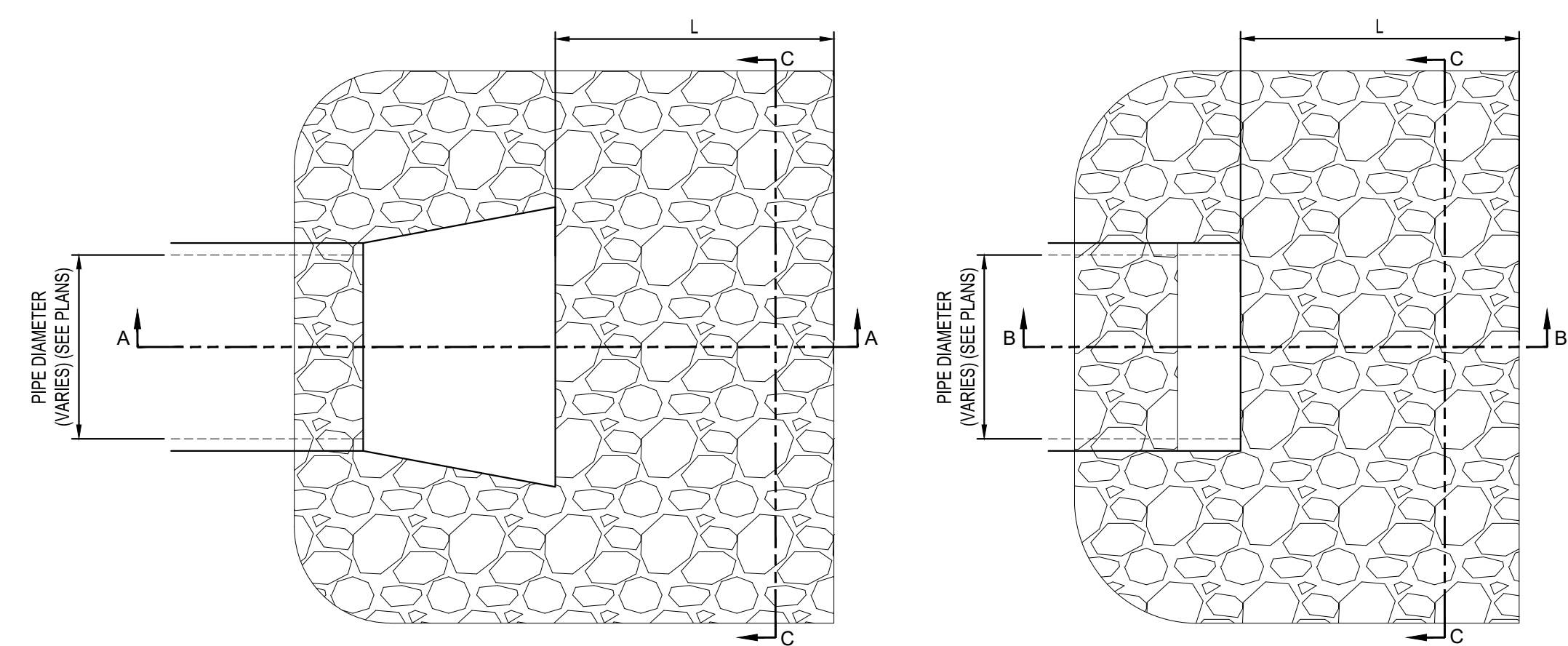
- KEY NOTES:**
- DISTANCE VARIES. REFER TO PLANS AND DETAILS. (1" MIN. ABOVE BASE FLOW LINE)
 - SIZE AND TYPE VARIES. REFER TO PLANS AND SCHEDULES.
 - RIPRAP SHALL BE MNDOT CLASS III, UNLESS OTHERWISE SPECIFIED. THE CUBIC YARD LISTED IN THE TABLE SHALL BE INCIDENTAL TO THE RESPECTIVE BID ITEM. ADDITIONAL RIPRAP SHALL BE PAID FOR BY THE CUBIC YARD AS DETERMINED BY ENGINEER.
 - GEOTEXTILE FABRIC SHALL BE MNDOT TYPE IV. (INCIDENTAL TO RESPECTIVE BID ITEM)
 - RIPRAP SHALL BE REQUIRED ON THE OPPOSITE BANK FOR TILE OUTLETS 24-INCHES AND LARGER OR AS APPROVED BY THE ENGINEER. ADDITIONAL RIPRAP SHALL BE PAID FOR BY THE CUBIC YARD.
- NOTES:**
- RIPRAP SHALL NOT IMPEDE FLOW FROM THE TILE OUTLET OR THE RECEIVING BODY.
 - 'D' REFERS TO PIPE INSIDE DIAMETER

RIPRAP AT TILE OUTLET
NTS



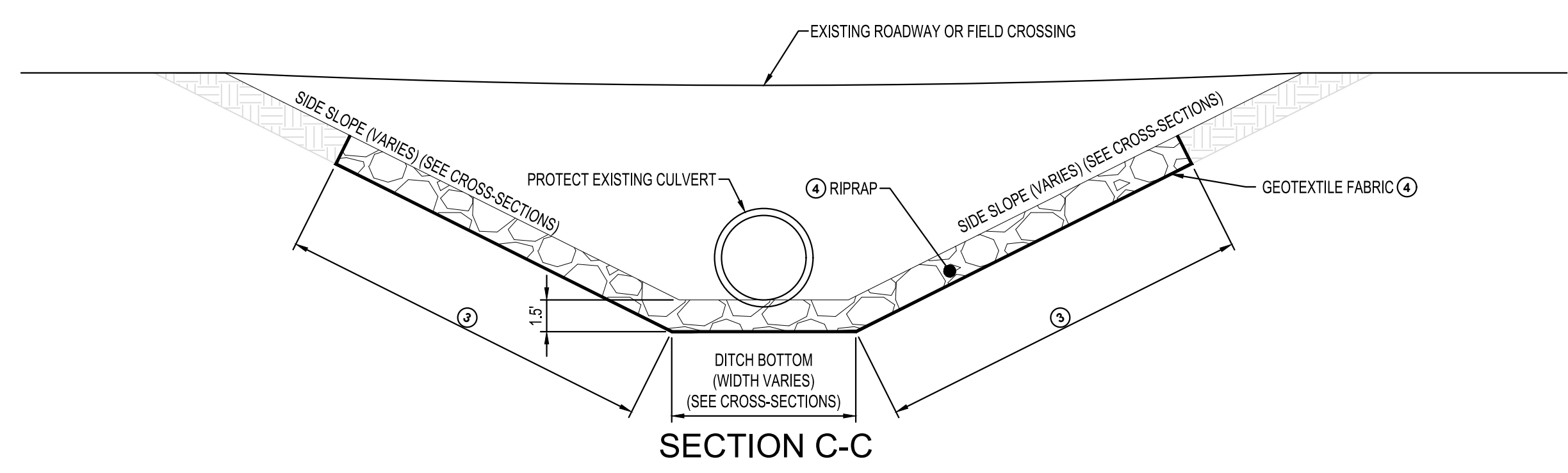
NOTES:

- 1 TYPE AND SIZE VARIES. REFER TO DETAILED CULVERT CROSSINGS. ALL RCP PIPE SECTIONS SHALL BE TIED TOGETHER, WATERTIGHT, GASKETED, AND TONGUE AND GROOVE DESIGN CONFORMING TO MNDOT 3006G. ALL JOINTS SHALL BE WRAPPED IN GEOTEXTILE FABRIC. (INCIDENTAL)
- 2 GRANULAR ENCASEMENT MATERIAL AND GRANULAR HAUNCHING MATERIAL VARIES BASED ON CULVERT TYPE AND SHALL BE INCIDENTAL TO CULVERT INSTALLATION. REFER TO CONTRACT DOCUMENTS.
- 3 GRANULAR BEDDING MATERIAL SHALL BE PAID FOR BY THE CUBIC YARD INSTALLED.
- 4 TRENCH CLEARANCE WIDTHS SHALL COMPLY WITH MANUFACTURER RECOMMENDATIONS.
- 5 A CLAY PLUG SHALL BE CONSTRUCTED AND MECHANICALLY COMPACTED FROM THE BOTTOM OF THE TRENCH TO THE TOP OF THE CROSSING ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES. THE MATERIAL SHALL BE IMPERVIOUS AND SHALL BE A MINIMUM OF 2 FEET IN THICKNESS. (INCIDENTAL)
- 6 COMPACTED BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- 7 SALVAGE & REPLACE EXISTING CROSSING SURFACE MATERIAL. ADDITIONAL CLASS 5 AGGREGATE MAY BE NEEDED TO MATCH EXISTING SECTION OR 10" MINIMUM FOR ROADWAYS (8" MINIMUM FOR FIELD CROSSINGS), WHICHEVER IS GREATER. (INCIDENTAL TO CROSSING).
- 8 WIDTH AND SLOPE OF AGGREGATE SURFACE SHALL MATCH EXISTING CONDITIONS, UNLESS OTHERWISE SPECIFIED IN THE DETAILED CULVERT CROSSINGS.
- 9 REFER TO DETAILED CULVERT CROSSINGS FOR ROAD AND DRAINAGE DITCH SLOPES.
- 10 RIPRAP SHALL BE MNDOT CLASS III PLACED ON TYPE IV GEOTEXTILE FABRIC, UNLESS OTHERWISE SPECIFIED IN THE PLANS. REFER TO TYPICAL CULVERT RIPRAP ARMOR DETAIL FOR DIMENSIONS.
THE CONTRACTOR SHALL VERIFY PROPER POSITIONING OF THE CULVERT PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF THE CULVERT POSITIONING IS NOT COMPATIBLE WITH THE FLOW OF THE DITCH WHEN STAKING IS COMPLETED, THE ENGINEER SHALL BE NOTIFIED.
ALL GRANULAR HAUNCHING AND ENCASEMENT MATERIAL, CLASS 5 AGGREGATE, GEOTEXTILE FABRIC, CLAY PLUGS, EXCAVATION, ETC. SHALL BE INCIDENTAL.
THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE DISTURBED ROADS UNTIL THE PROJECT IS COMPLETED OR ROAD AUTHORITY HAS RESUMED CONTROL, WHICHEVER IS SOONER.
- 11 SEEDING AND EROSION CONTROL SHALL ADHERE TO THE CONTRACT DOCUMENTS.
- 11 A MINIMUM 6-INCHES OF TOPSOIL SHALL BE PLACED ON ROAD SIDE SLOPES FOR VEGETATION ESTABLISHMENT, INCIDENTAL TO CULVERT CONSTRUCTION.



CULVERT WITH END SECTION

CULVERT WITHOUT END SECTION



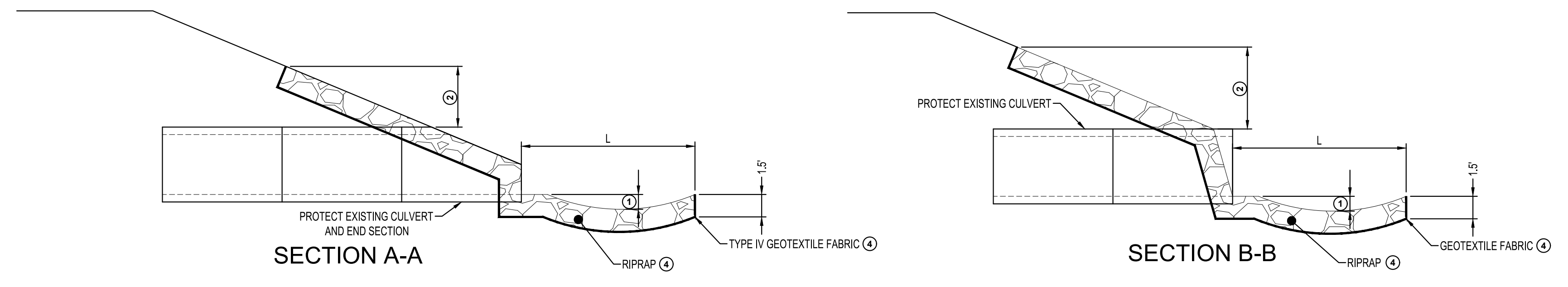
SECTION C-C

KEY NOTES:

- 1 UPSTREAM END OF CULVERT: 0' (NO SUMP REQUIRED), DOWNSTREAM END OF CULVERT: 1' FOR PIPES LESS THAN 30" IN DIAMETER AND 1.5' FOR PIPES GREATER THAN OR EQUAL TO 30" IN DIAMETER.
- 2 RIPRAP HEIGHT SHALL BE A MINIMUM OF 2' ABOVE THE CULVERT. THE HEIGHT MAY BE ADJUSTED WITH APPROVAL FROM THE ENGINEER.
- 3 (W-DITCH BOTTOM WIDTH)/2 OR LENGTH NEEDED TO BE 2' ABOVE CULVERT, WHICHEVER IS GREATER.
- 4 RIPRAP SHALL BE MNDOT CLASS III PLACED ON TYPE IV GEOTEXTILE FABRIC UNLESS OTHERWISE SPECIFIED IN THE PLANS.

NOTES:

- 1 L REFERS TO LENGTH AND W REFERS TO WIDTH IN THE RIPRAP SCHEDULE. THE LENGTH AND WIDTH FOR THE UPSTREAM ENDS SHALL BE COORDINATED WITH THE ENGINEER BASED ON THE ON-SITE CONDITIONS FOUND.
- 2 REFER TO RIPRAP SCHEDULE OR PLANS FOR RIPRAP DIMENSIONS AND QUANTITIES.
- 3 RIPRAP QUANTITIES ARE ESTIMATED. ADDITIONAL QUANTITY MAY BE REQUIRED BY ENGINEER. ALL RIPRAP QUANTITIES SHALL BE PAID BY THE CUBIC YARD INSTALLED.
- 4 ALL RIPRAP SHALL BE PLACED BELOW LEGAL DITCH GRADE AND SHALL NOT INTERFERE WITH THE FLOW THROUGH THE CULVERT.
- 5 ALL DIAMETERS REFERENCED ARE INSIDE DIAMETERS.



SECTION A-A

SECTION B-B

TYPICAL CULVERT RIPRAP ARMOR NTS

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
BAILEY BOCCHINO
Bailey Bocchino
 DATE: 11/14/24 LIC. NO. 59968

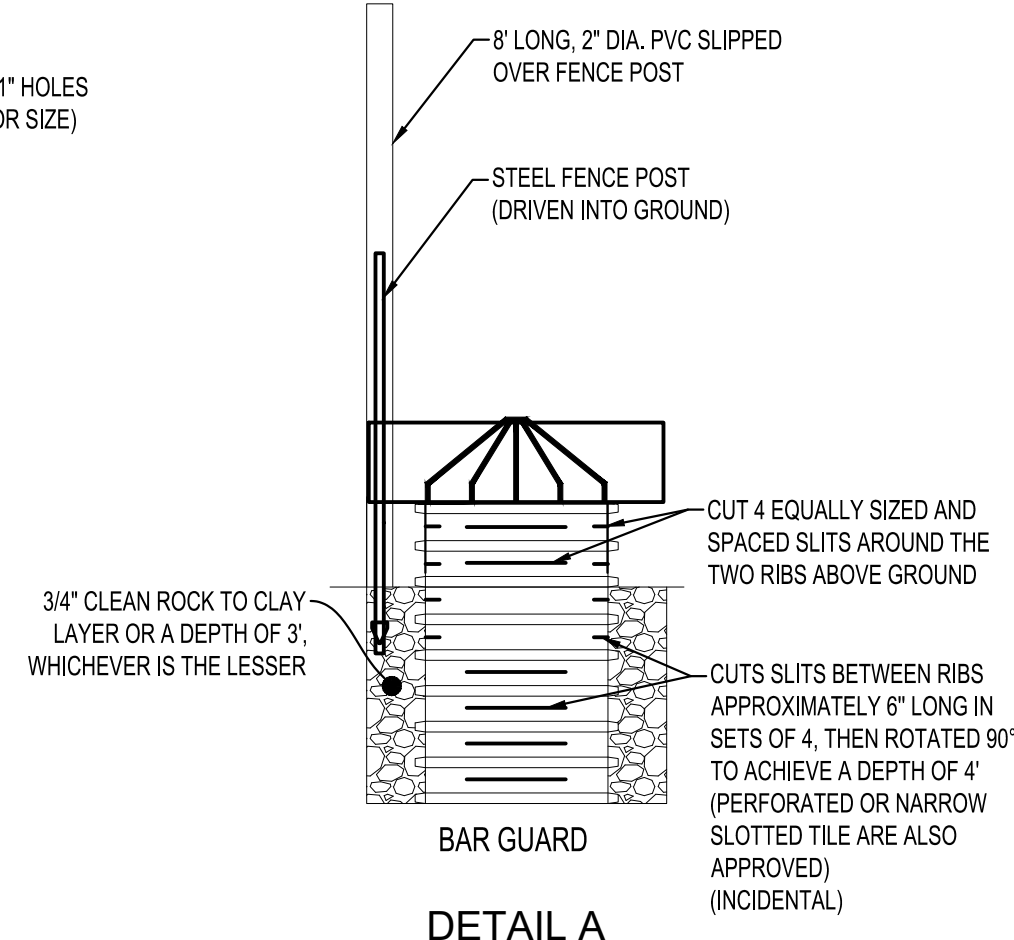
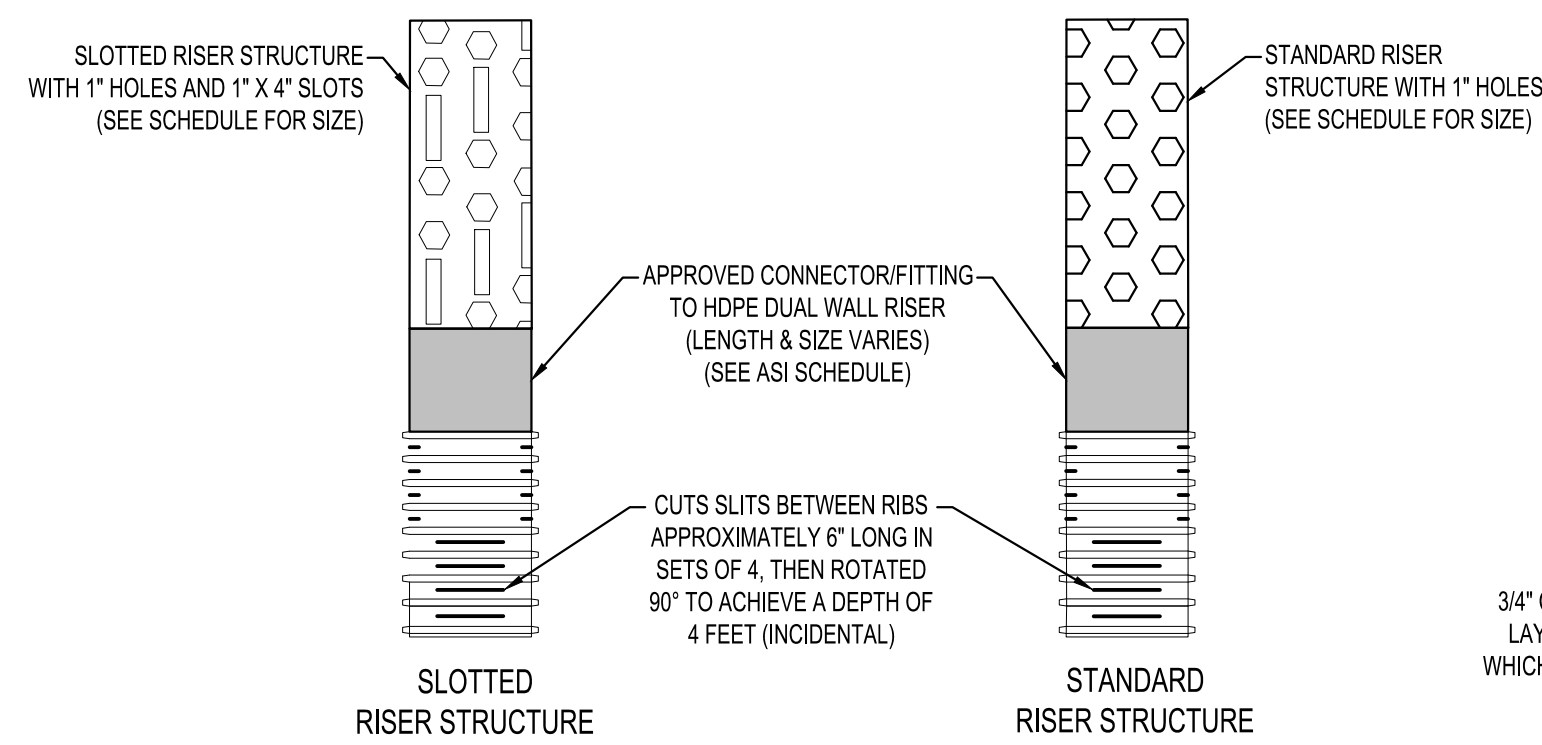
THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

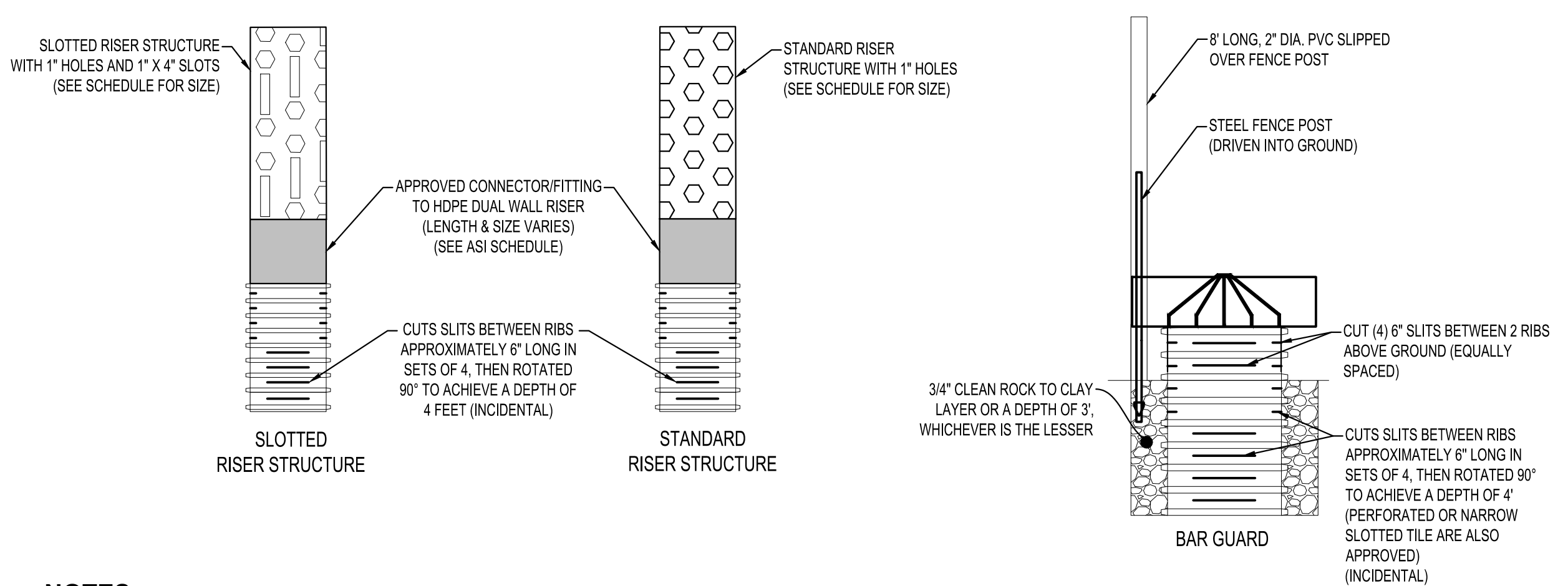
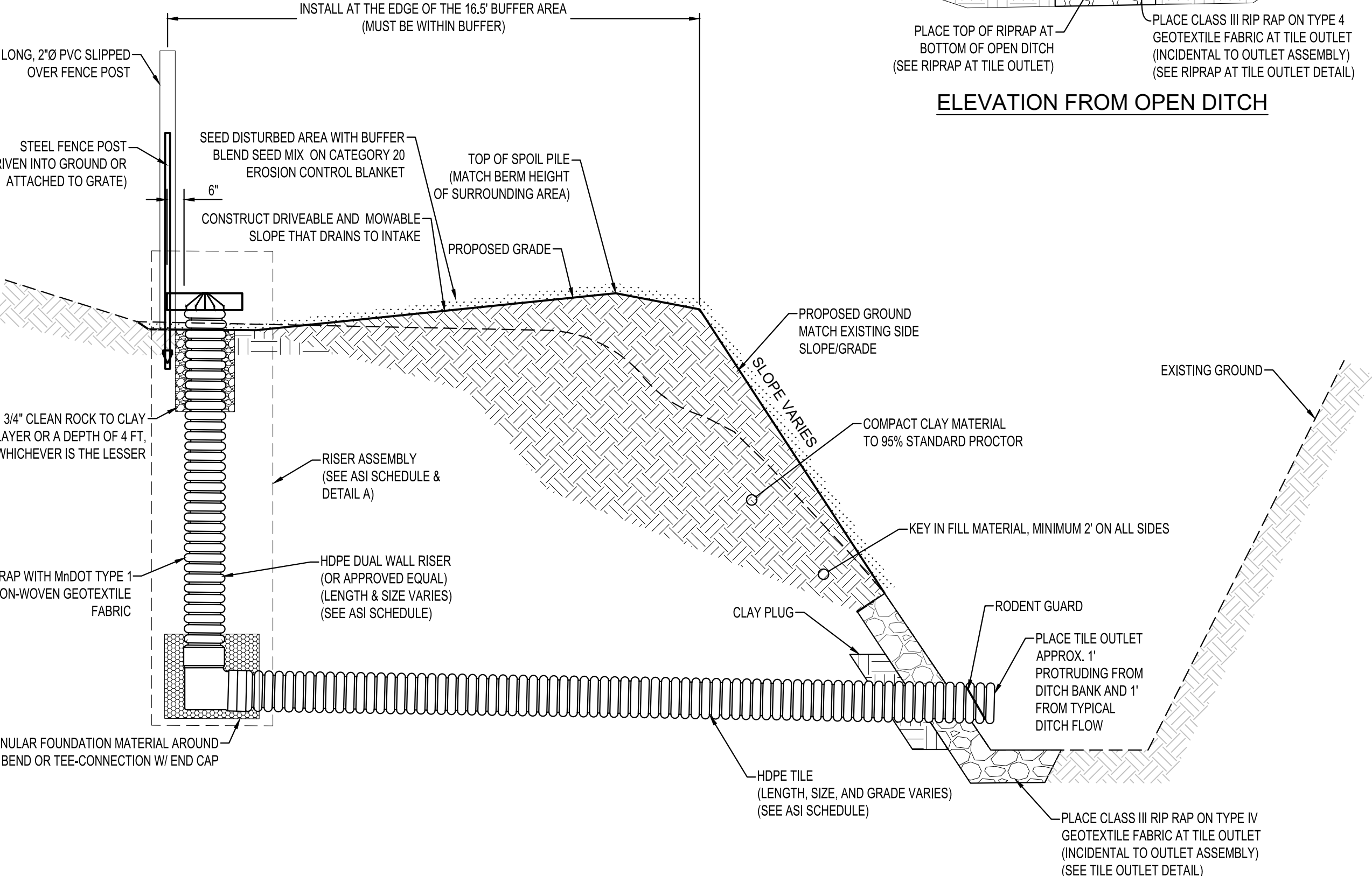
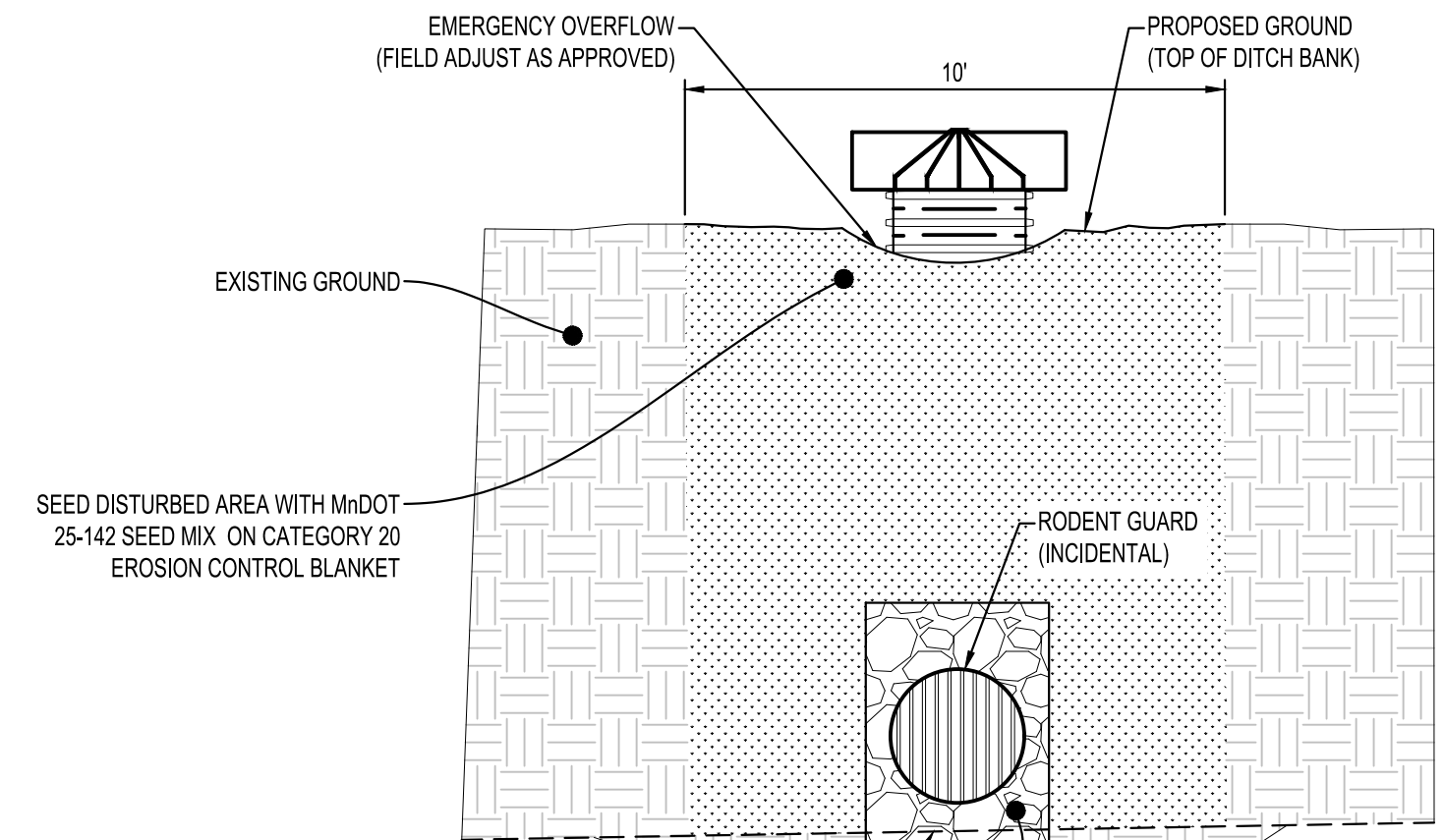
PROJECT NO. 22-25087
 FILE NAME 25087 DETAILS
 DRAWN BY KJH
 DESIGNED BY BPB
 REVIEWED BY BPB
 ORIGINAL ISSUE DATE --/--/--
 CLIENT PROJECT NO. -

TITLE
DETAILS



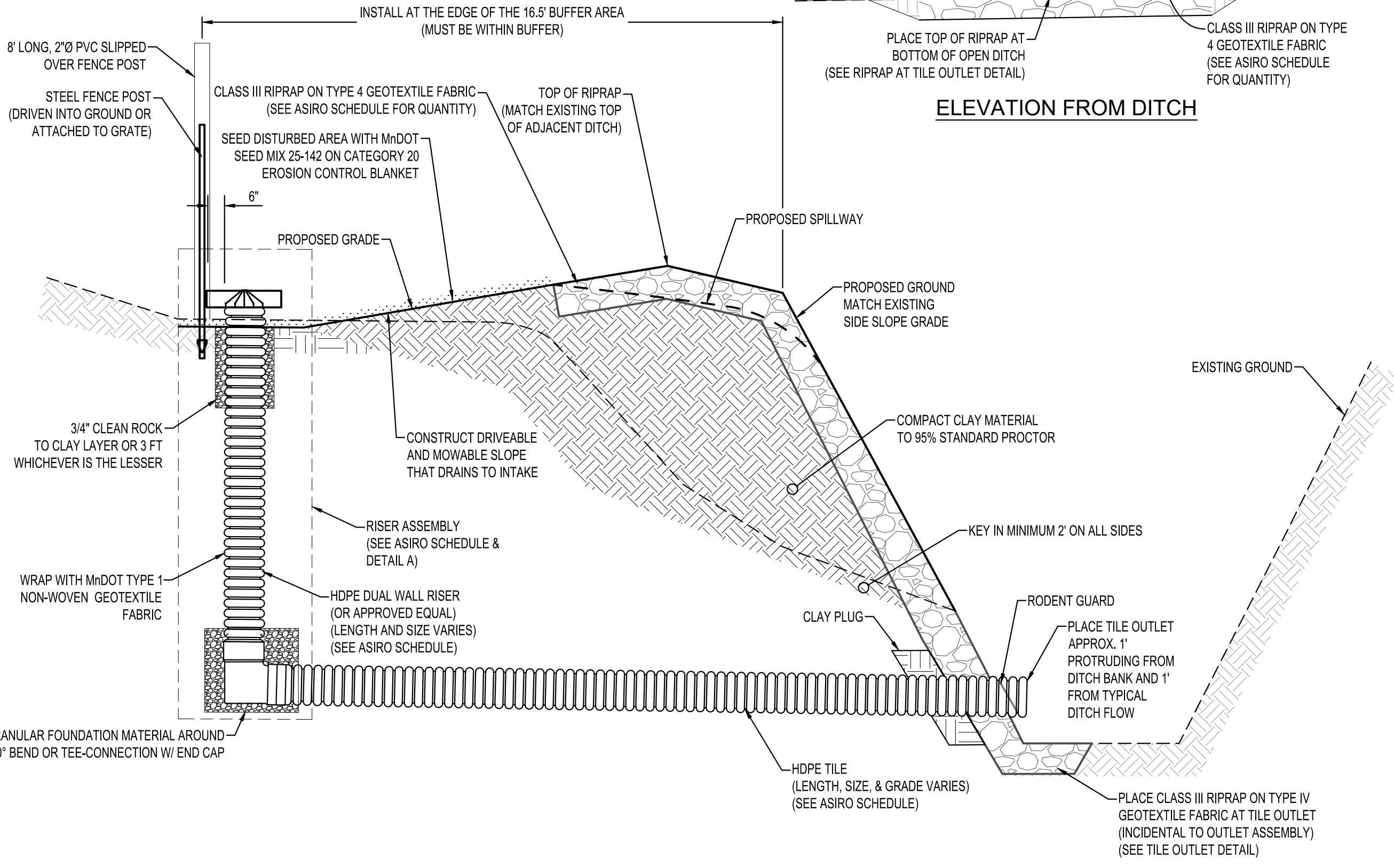
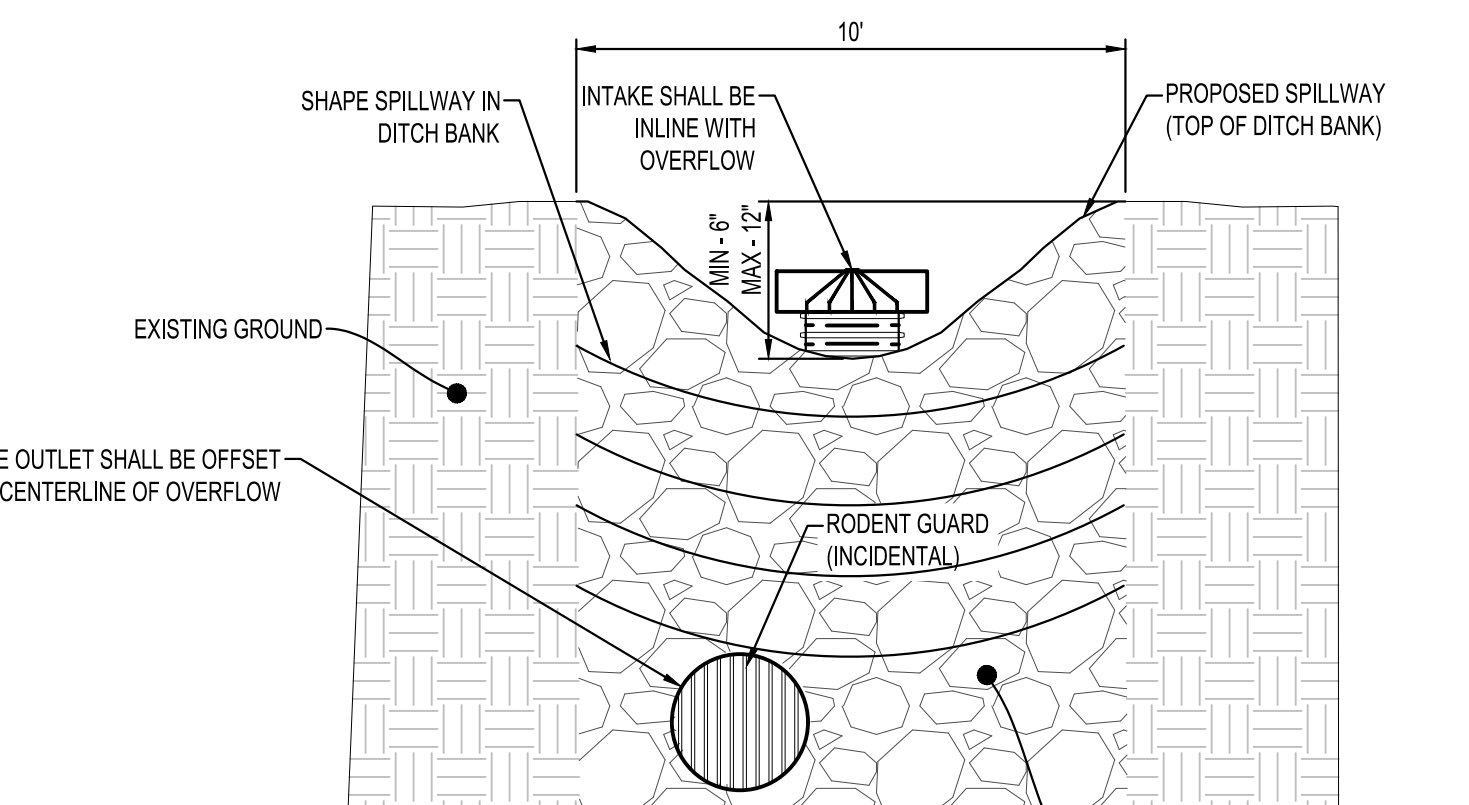
NOTES:

1. INTAKE TYPE AND TILE SIZE VARIES PER ASI. (SEE SCHEDULE)
2. RISER ASSEMBLY SHALL BE A SEPARATE PAY ITEM THAN THE OUTLET ASSEMBLY.
3. ALL DISTURBED AREAS WITHIN BUFFER EASEMENT SHALL BE SEEDED WITH BUFFER BLEND SEED MIX ON CATEGORY 20 EROSION CONTROL BLANKET. (INCIDENTAL)
4. ALL EFFORTS SHALL BE MADE TO SEPARATE SOIL TYPES. BACKFILL SHALL BE COMPACTED PRIOR TO PLACEMENT OF TOPSOIL, EXCEPT THE TOP TWO (2) FEET, FOR WHICH COMPACTION SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 6", OR UNIFORM TO THE TOPSOIL DEPTH OF THE SURROUNDING AREA. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP AND SEPARATED. NO TOPSOIL SHALL BE PLACED IN THE TRENCH BELOW 2' FROM EXISTING GROUND UNLESS APPROVED BY THE ENGINEER.
5. ALL INTAKES SHALL BE WRAPPED WITH MnDOT TYPE 1 GEOTEXTILE FABRIC. (INCIDENTAL TO RISER ASSEMBLY)
6. ALL SLITS CUT INTO RISER ARE INCIDENTAL TO RISER ASSEMBLY.
7. ALL 3/4" CLEAN ROCK AND GRANULAR FOUNDATION MATERIAL IS INCIDENTAL TO RISER ASSEMBLY.
8. ALL OUTLET RIPRAP IS INCIDENTAL TO OUTLET ASSEMBLY.
9. INTAKES SHALL BE FIELD ADJUSTED BASED ON ACTUAL LOCATION OF LOW AREAS, AS DETERMINED BY THE ENGINEER.
10. TILE OUTLET ASSEMBLY SHALL CONFORM TO STANDARD TILE INSTALLATION.
11. SHAPING OF LOW AREA TO GRADE TO DROP INTAKE SHALL BE INCIDENTAL TO PAY ITEM.
12. TRASH GRATE, ANTI-VORTEX PLATE, AND FENCE POST WITH PVC SHALL BE INCIDENTAL.
13. TILE FLAGS (7' MIN) MAY BE SUBSTITUTED FOR FENCE POST WITH PVC.



NOTES:

1. INTAKE TYPE & TILE SIZE VARIES PER ASI. (SEE SCHEDULE)
2. RISER ASSEMBLY SHALL BE A SEPARATE PAY ITEM THAN THE OUTLET ASSEMBLY.
3. ALL DISTURBED AREAS WITHIN BUFFER EASEMENT SHALL BE SEEDED WITH MnDOT SEED MIX 25-142 ON CATEGORY 20 EROSION CONTROL BLANKET. (INCIDENTAL)
4. ALL EFFORTS SHALL BE MADE TO SEPARATE SOIL TYPES. BACKFILL SHALL BE COMPACTED PRIOR TO PLACEMENT OF TOPSOIL, EXCEPT THE TOP TWO (2) FEET, FOR WHICH COMPACTION SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 6", OR UNIFORM TO THE TOPSOIL DEPTH OF THE SURROUNDING AREA. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP AND SEPARATED. NO TOPSOIL SHALL BE PLACED IN THE TRENCH BELOW 2' FROM EXISTING GROUND UNLESS APPROVED BY THE ENGINEER.
5. ALL INTAKES SHALL BE WRAPPED WITH MnDOT TYPE 1 GEOTEXTILE FABRIC. (INCIDENTAL TO RISER ASSEMBLY)
6. ALL SLITS CUT INTO RISER ARE INCIDENTAL TO RISER ASSEMBLY.
7. ALL 3/4" CLEAN ROCK AND GRANULAR FOUNDATION MATERIAL IS INCIDENTAL TO RISER ASSEMBLY.
8. ALL OUTLET RIPRAP IS INCIDENTAL TO OUTLET ASSEMBLY
9. INTAKES SHALL BE FIELD ADJUSTED BASED ON ACTUAL LOCATION OF LOW AREAS, AS DETERMINED BY THE ENGINEER.
10. TILE OUTLET ASSEMBLY SHALL CONFORM TO STANDARD TILE INSTALLATION.
11. SHAPING OF LOW AREA TO GRADE TO DROP INTAKE SHALL BE INCIDENTAL TO PAY ITEM.
12. TRASH GRATE, ANTI-VORTEX PLAT, AND FENCE POST WITH PVC SHALL BE INCIDENTAL.
13. TILE FLAGS (7' MIN) MAY BE SUBSTITUTED FOR FENCE POST WITH PVC.



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCCHINO

Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087

FILE NAME 25087 DETAILS

DRAWN BY KJH

DESIGNED BY BPB

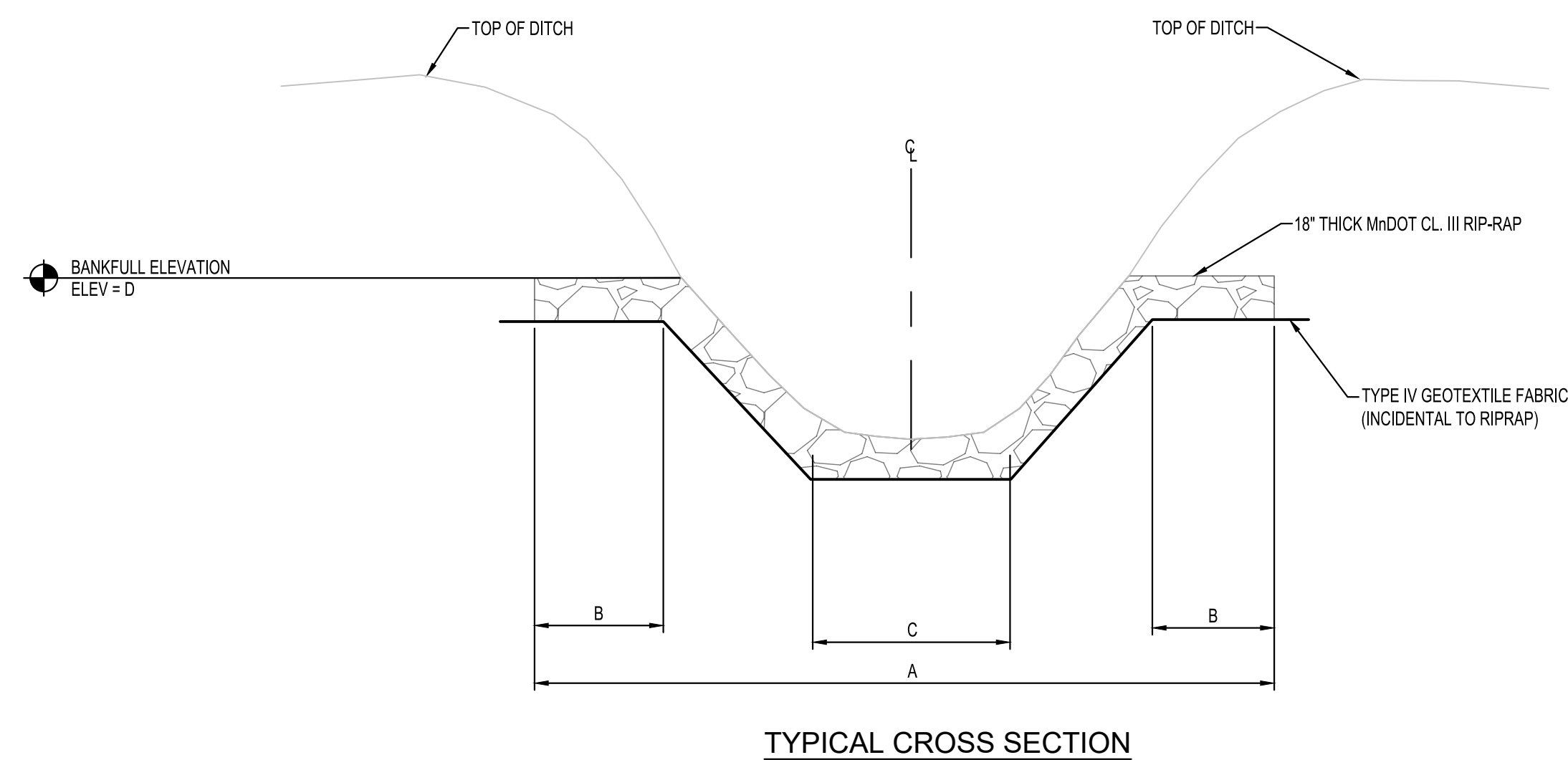
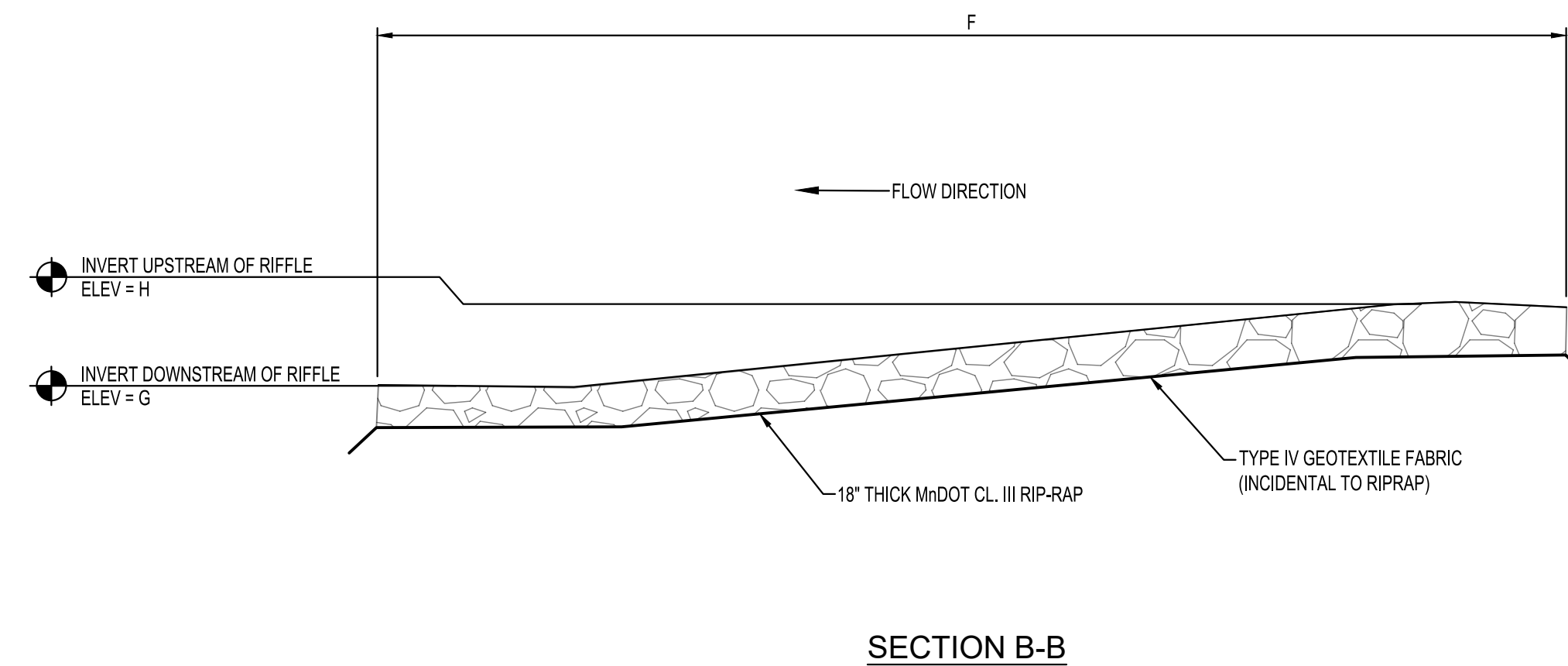
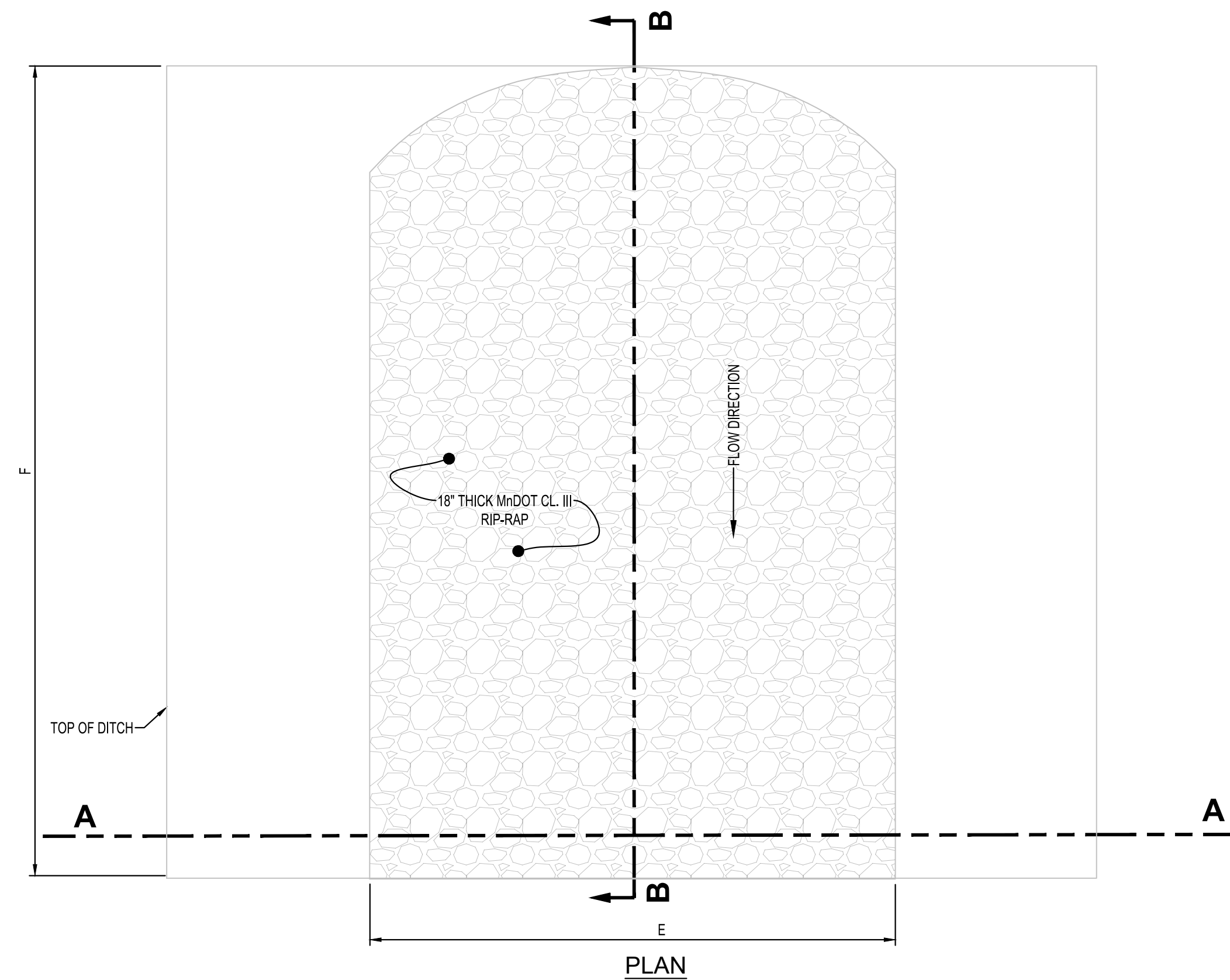
REVIEWED BY BPB

ORIGINAL ISSUE DATE --/--

CLIENT PROJECT NO. -

TITLE

DETAILS



RIPRAP RIFFLE
NTS

Riffle Schedule											
Description			Upstream				Downstream				Riprap
ID	BRANCH (LOCATION)	STATION	A Riffle Width (ft)	B Key-In Width (ft)	C Channel Bottom Width (ft)	D Bankfull Elevation (MSL)	E Bankfull Width (ft)	F Riffle Length (ft)	G Downstream Elevation (MSL)	H Upstream Elevation (MSL)	Class III Riprap (CY)
1	Main	86+20	40	5	12	1070.00	30	20	1063.50	1064.42	28
2	Main	106+90	40	5	12	1071.00	30	50	1065.10	1067.98	66
3	Main	119+40	40	5	12	1073.00	30	30	1067.70	1069.38	38

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino
DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

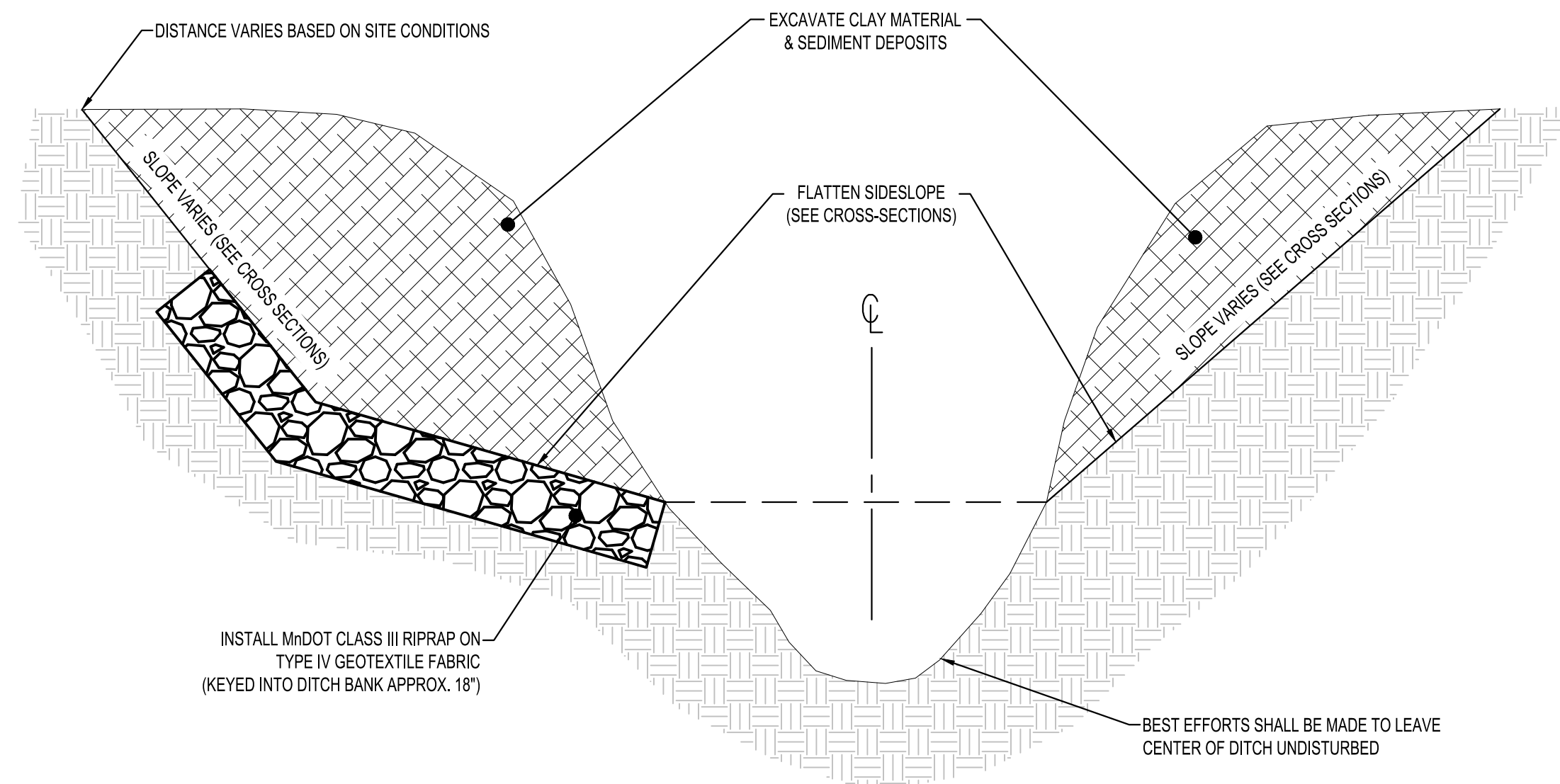
PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087
FILE NAME 25087 DETAILS
DRAWN BY KJH
DESIGNED BY BPB
REVIEWED BY BPB
ORIGINAL ISSUE DATE --/--
CLIENT PROJECT NO. -

TITLE
DETAILS



NOTES:

- MnDOT CLASS III RIPRAP ON TYPE IV GEOTEXTILE FABRIC SHALL BE PAID FOR BY THE CUBIC YARD INSTALLED.
- TYPICAL DETAIL- REFER TO CROSS-SECTIONS FOR DIMENSIONS.
- SEEDING SHALL BE MEASURED AND PAID FOR BY THE SY INSTALLED.
- COORDINATE RIPRAP DIMENSIONS WITH ENGINEER BASED ON CONDITIONS FOUND AFTER SIDE SLOPE FLATTENING.
- DITCH BANK SEEDING MUST OCCUR WITHIN 2 DAYS OF CONSTRUCTION.

**SIDE SLOPE FLATTENING
WITH CLASS III RIPRAP**
NTS

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

**RICE & STEELE
COUNTIES
JUDICIAL DITCH
No. 6**

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087

FILE NAME 25087 DETAILS

DRAWN BY KJH

DESIGNED BY BPB

REVIEWED BY BPB

ORIGINAL ISSUE DATE --/--

CLIENT PROJECT NO. -

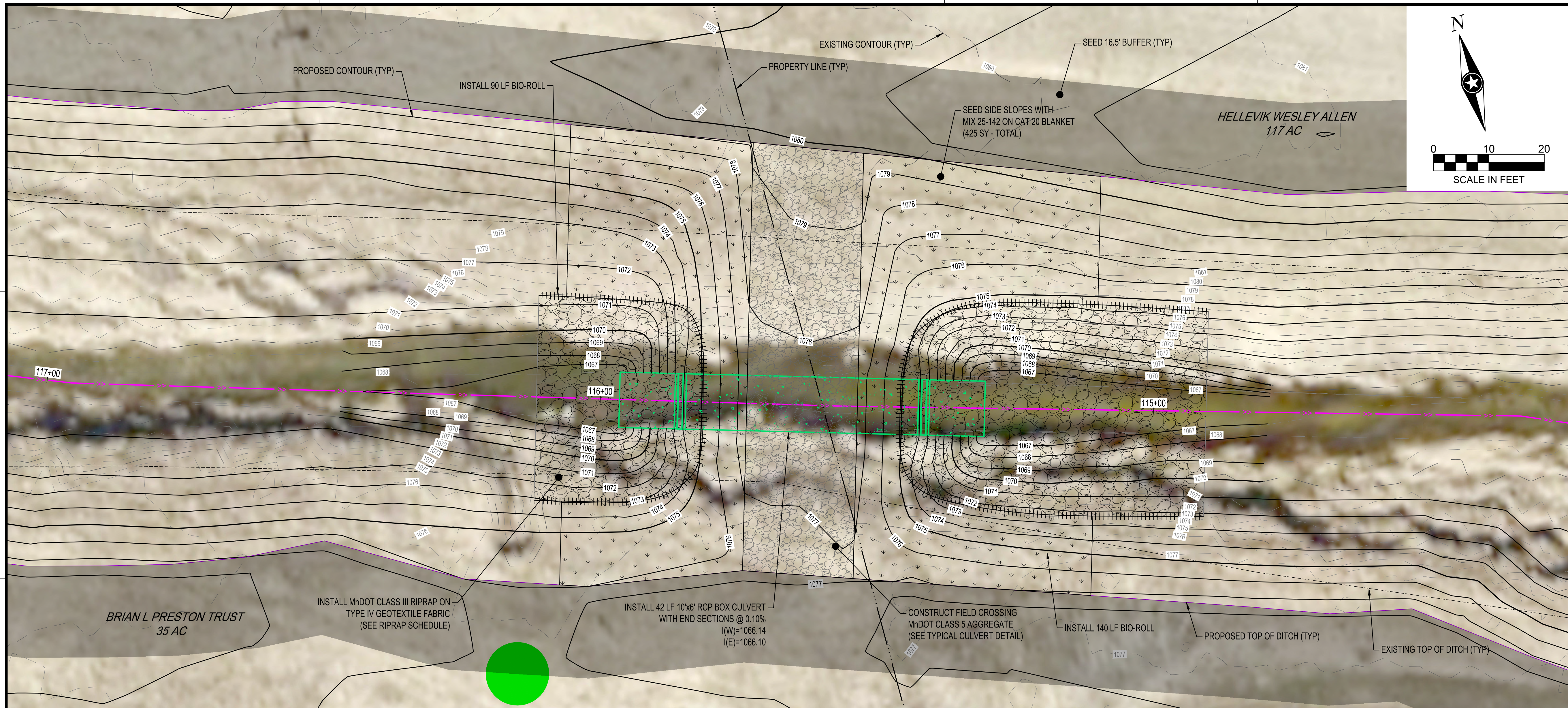
TITLE

DETAILS

SHEET

10

OF 27



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO.: 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

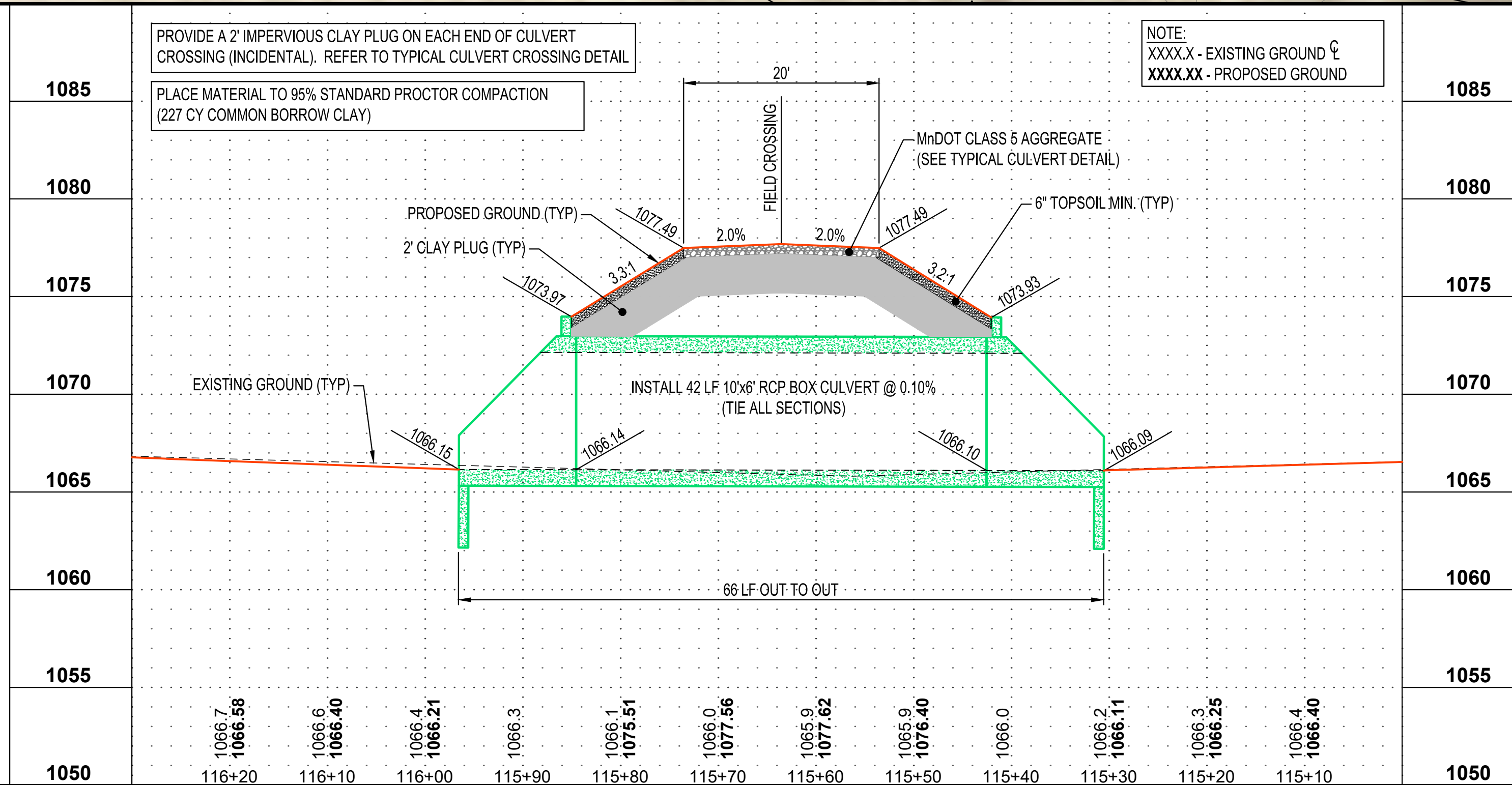
PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

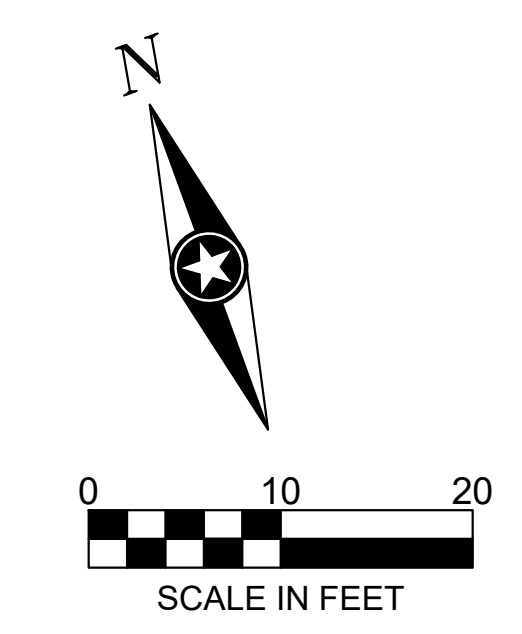
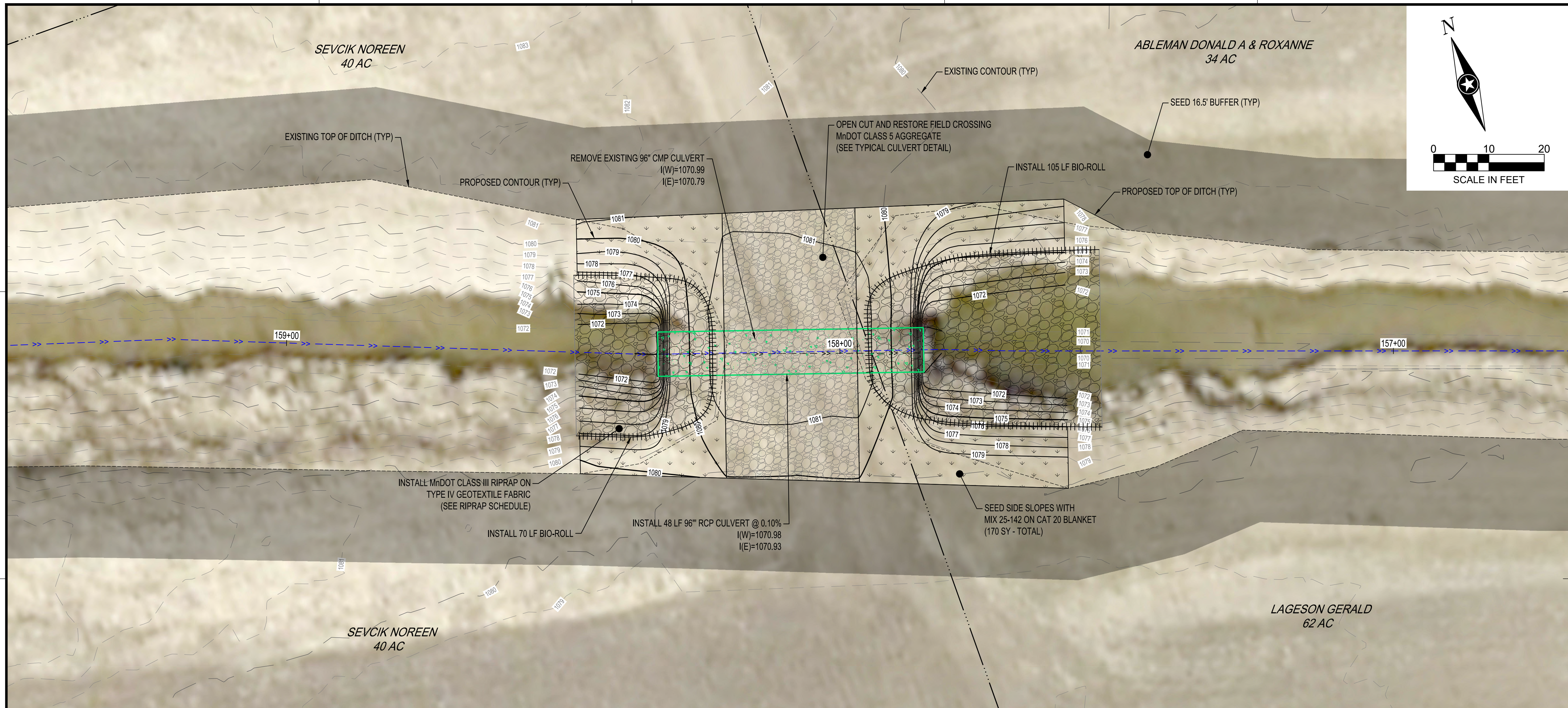
RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 CROSSING DETAILS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
DETAILED CULVERT CROSSING





I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

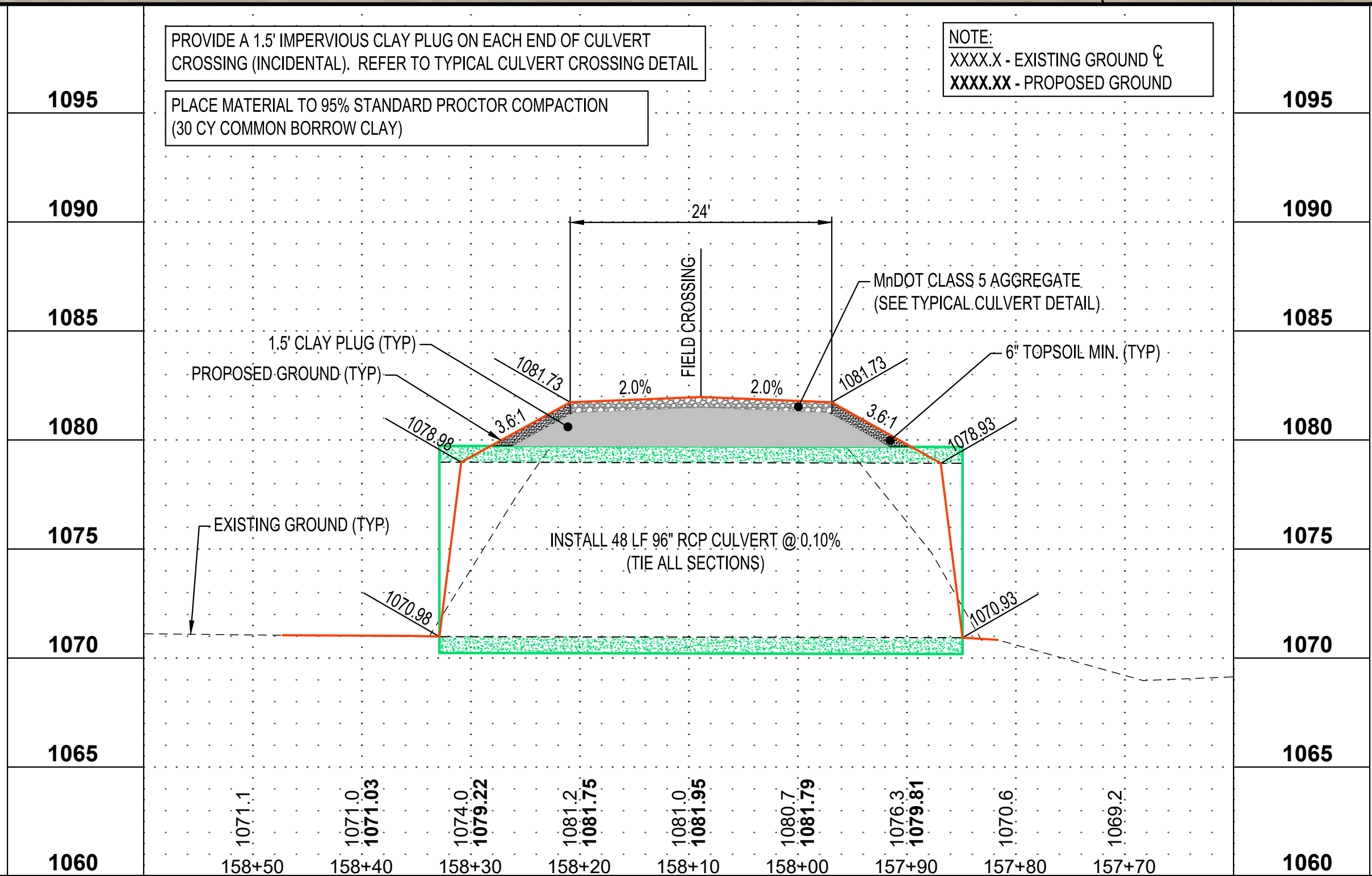
RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 CROSSING DETAILS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

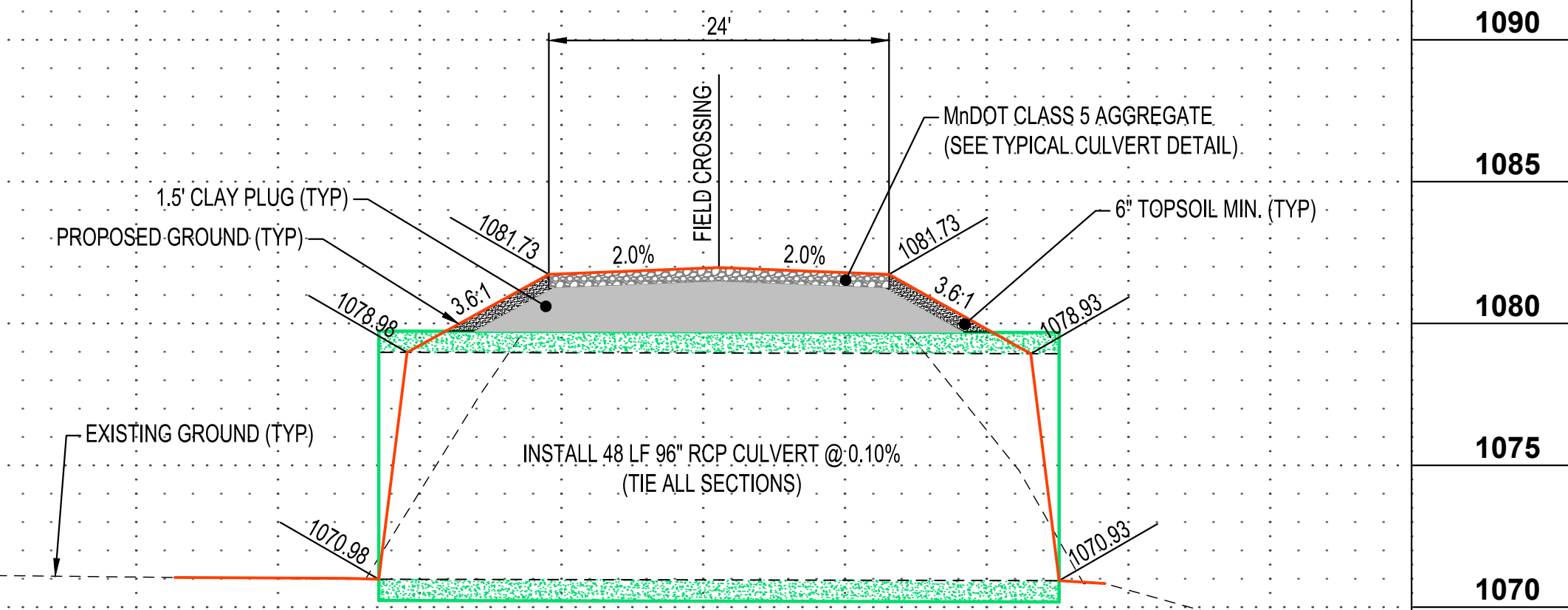
TITLE
DETAILED CULVERT CROSSING

SHEET
12 OF 27

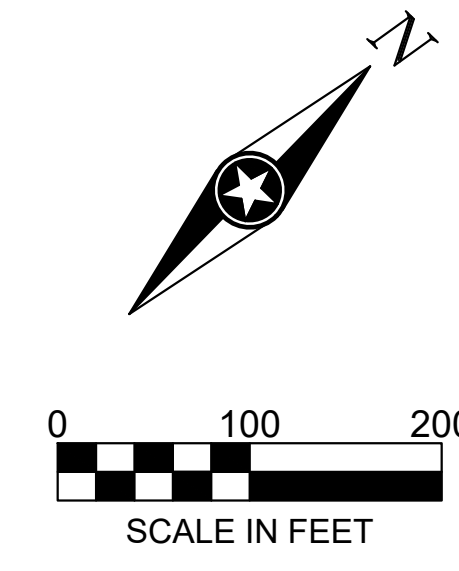


PROVIDE A 1.5' IMPERVIOUS CLAY PLUG ON EACH END OF CULVERT CROSSING (INCIDENTAL). REFER TO TYPICAL CULVERT CROSSING DETAIL

PLACE MATERIAL TO 95% STANDARD PROCTOR COMPACTION (30 CY COMMON BORROW CLAY)



1071.1	1071.0	1071.03	1074.0	1079.22	1081.2	1081.75	1081.0	1081.95	1080.7	1081.79	1076.3	1079.81	1070.6	1069.2
158+50	158+40	158+30	158+20	158+10	158+00	157+90	157+80	157+70						



PLAN LEGEND

- EXISTING OPEN DITCH
- PROPOSED SIDE SLOPE FLATTENING

PROFILE LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

- TOP OF DITCH (RIGHT)
- TOP OF DITCH (LEFT)
- EXISTING DITCH GRADE
- EXISTING LEGAL GRADE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

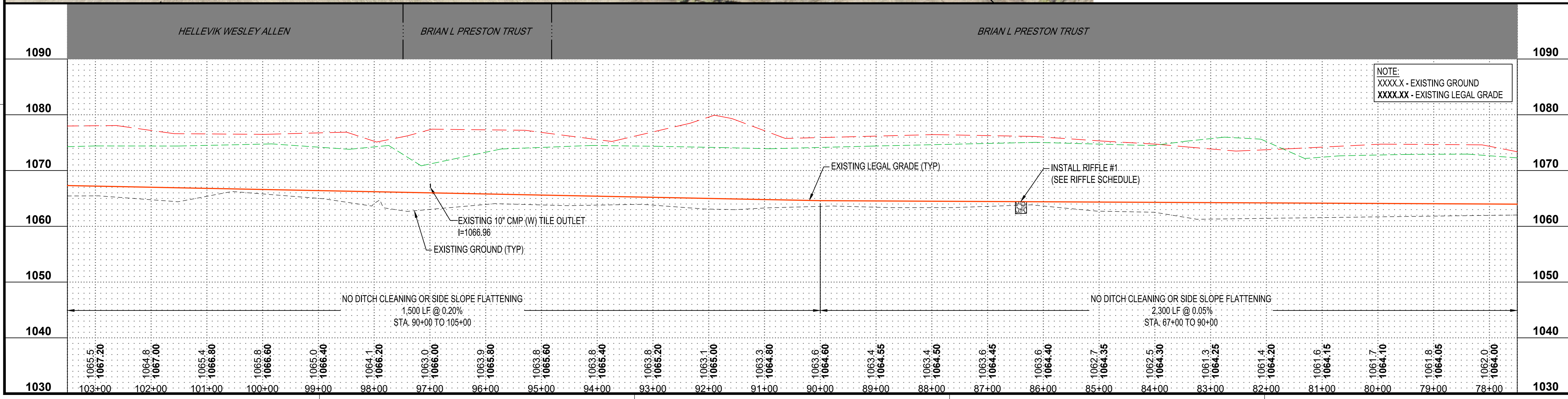
RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 MAINLINE PROFILES
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	---/---/---
CLIENT PROJECT NO.	-

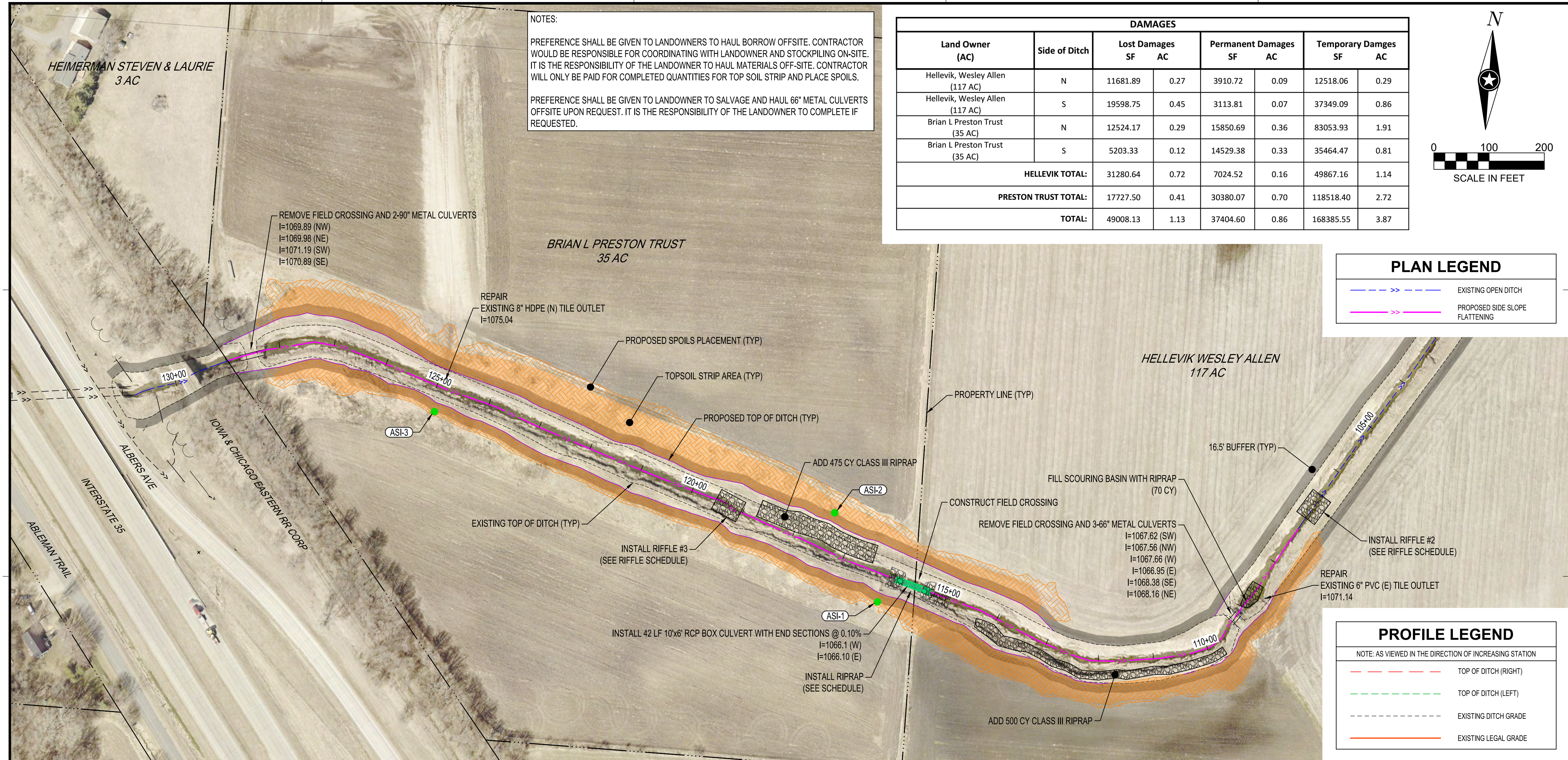
TITLE

PLAN - PROFILE MAILINE



SHEET

13 OF 27



NOTES:
 PREFERENCE SHALL BE GIVEN TO LANDOWNERS TO HAUL BORROW OFFSITE. CONTRACTOR WOULD BE RESPONSIBLE FOR COORDINATING WITH LANDOWNER AND STOCKPILING ON-SITE. IT IS THE RESPONSIBILITY OF THE LANDOWNER TO HAUL MATERIALS OFF-SITE. CONTRACTOR WILL ONLY BE PAID FOR COMPLETED QUANTITIES FOR TOP SOIL STRIP AND PLACE SPOILS.
 PREFERENCE SHALL BE GIVEN TO LANDOWNER TO SALVAGE AND HAUL 66" METAL CULVERTS OFFSITE UPON REQUEST. IT IS THE RESPONSIBILITY OF THE LANDOWNER TO COMPLETE IF REQUESTED.

Land Owner (AC)	Side of Ditch	Lost Damages		Permanent Damages		Temporary Damages	
		SF	AC	SF	AC	SF	AC
Hellevik, Wesley Allen (117 AC)	N	11681.89	0.27	3910.72	0.09	12518.06	0.29
Hellevik, Wesley Allen (117 AC)	S	19598.75	0.45	3113.81	0.07	37349.09	0.86
Brian L Preston Trust (35 AC)	N	12524.17	0.29	15850.69	0.36	83053.93	1.91
Brian L Preston Trust (35 AC)	S	5203.33	0.12	14529.38	0.33	35464.47	0.81
HELLEVIK TOTAL:		31280.64	0.72	7024.52	0.16	49867.16	1.14
PRESTON TRUST TOTAL:		17727.50	0.41	30380.07	0.70	118518.40	2.72
TOTAL:		49008.13	1.13	37404.60	0.86	168385.55	3.87

PLAN LEGEND

- > EXISTING OPEN DITCH
- > PROPOSED SIDE SLOPE FLATTENING

PROFILE LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

- TOP OF DITCH (RIGHT)
- TOP OF DITCH (LEFT)
- EXISTING DITCH GRADE
- EXISTING LEGAL GRADE



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
BAILEY BOCCHINO
Bailey Bocchino
 DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

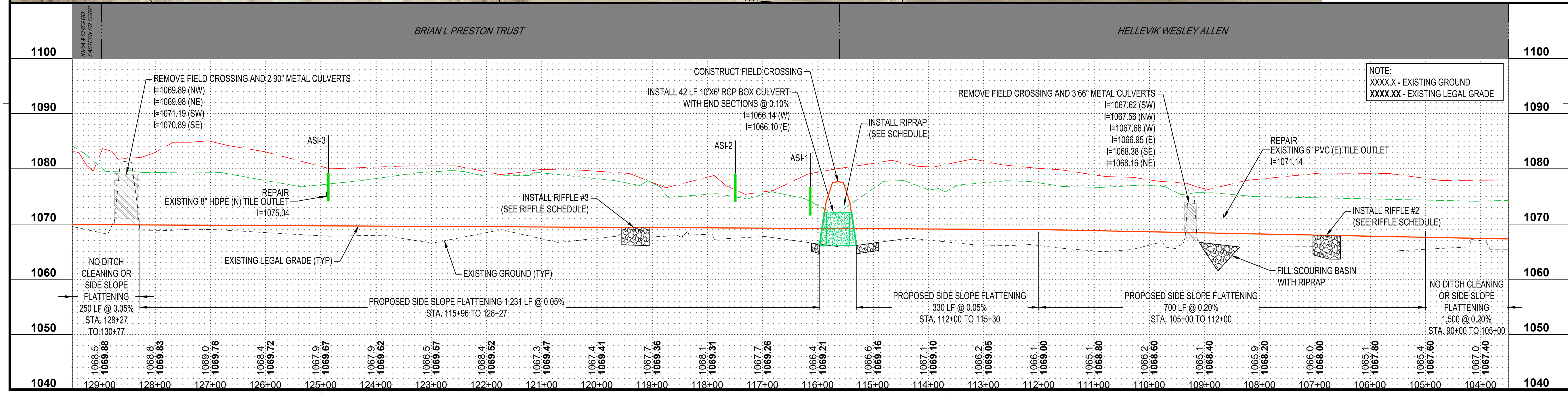
PROJECT NO.	22-25087
FILE NAME	25087 MAINLINE PROFILES
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	---/---/---
CLIENT PROJECT NO.	

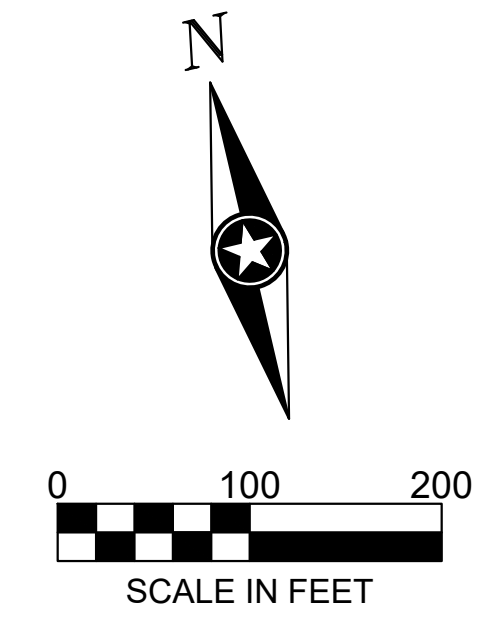
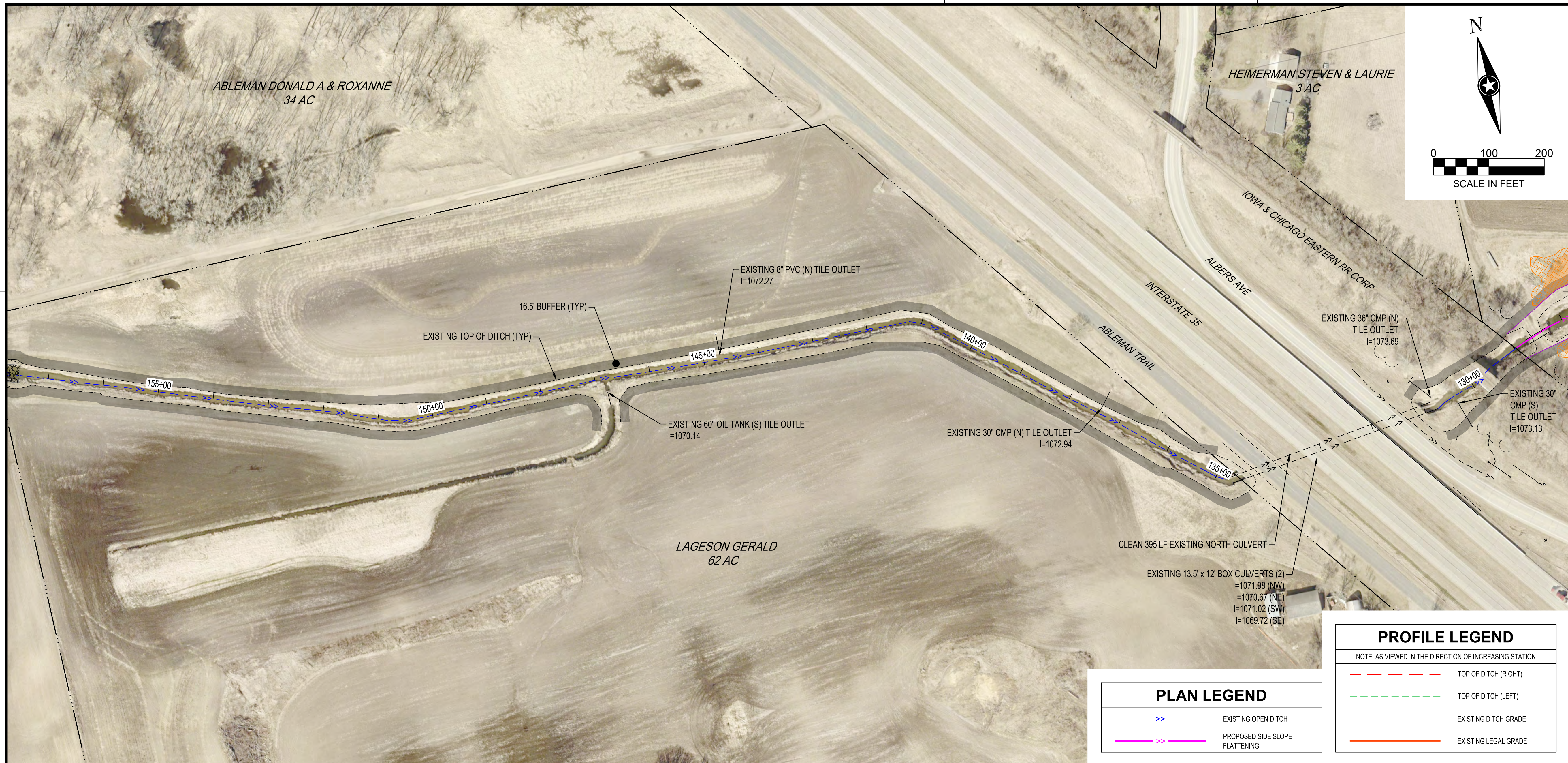
TITLE

PLAN - PROFILE MAILINE

SHEET

14 OF 27





I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCCHINO
Bailey Bocchino
 DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

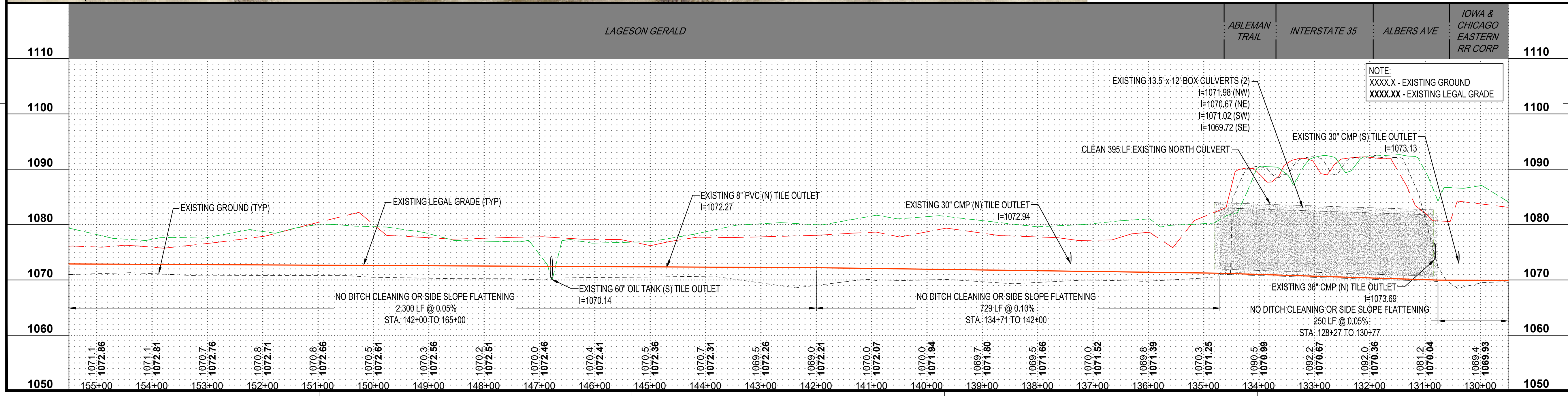
PLAN LEGEND	
	EXISTING OPEN DITCH
	PROPOSED SIDE SLOPE FLATTENING

PROFILE LEGEND	
NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
	TOP OF DITCH (RIGHT)
	TOP OF DITCH (LEFT)
	EXISTING DITCH GRADE
	EXISTING LEGAL GRADE

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA



REVISION SCHEDULE		
DATE	DESCRIPTION	BY

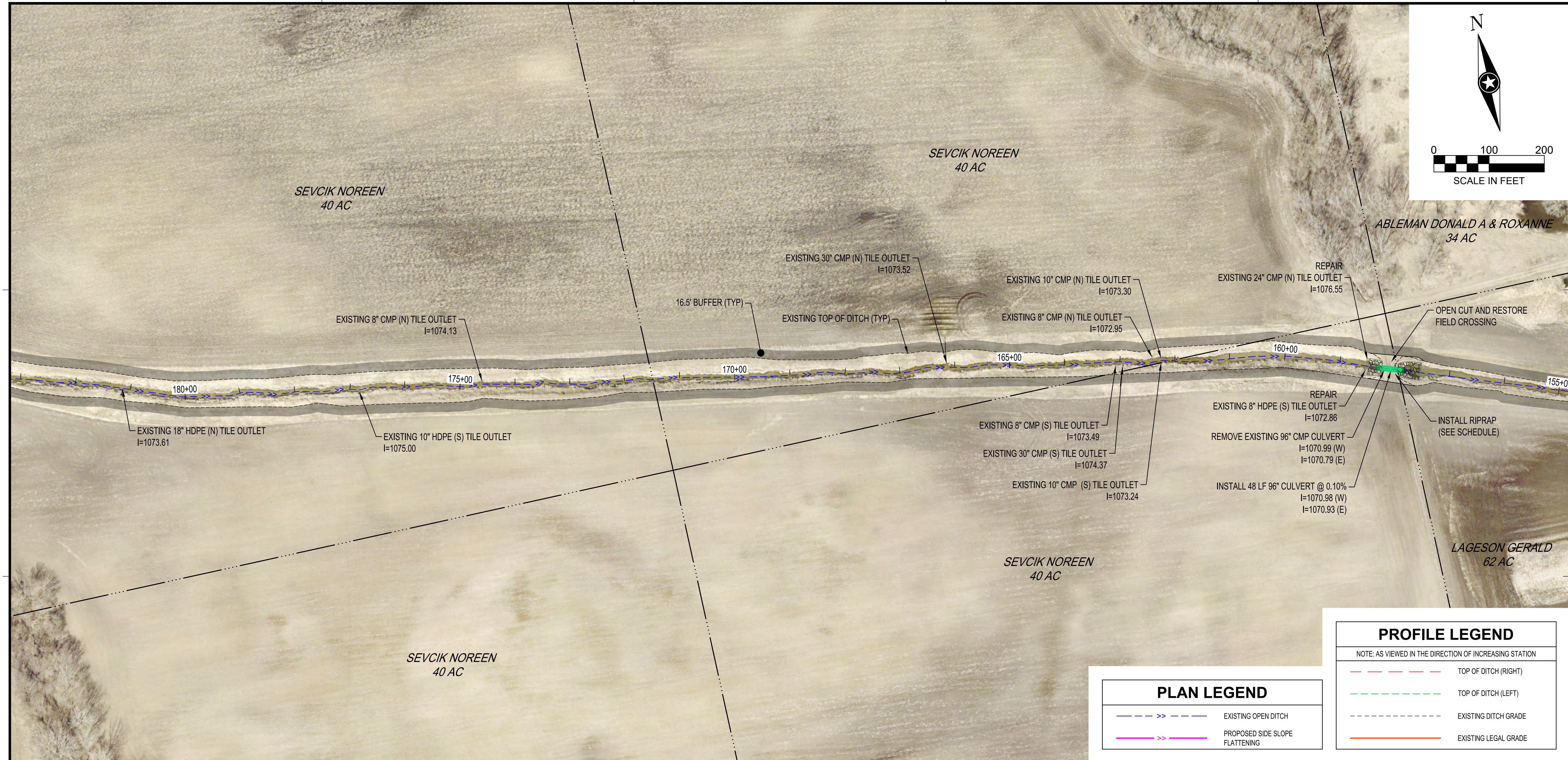
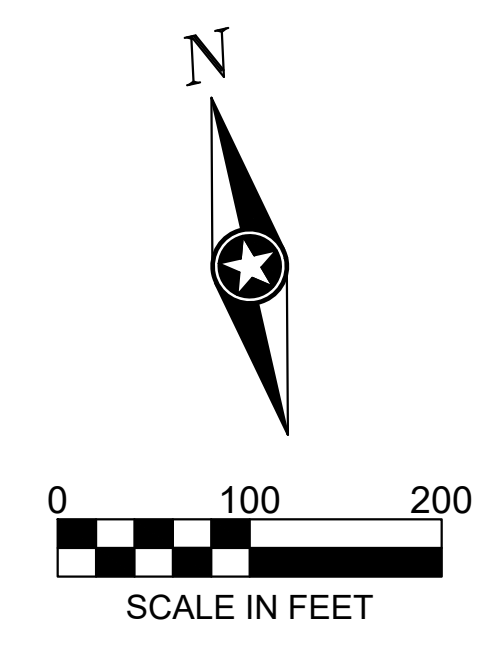
PROJECT NO.	22-25087
FILE NAME	25087 MAINLINE PROFILES
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	---/---/---
CLIENT PROJECT NO.	

TITLE

PLAN - PROFILE MAILINE

SHEET

15 OF 27



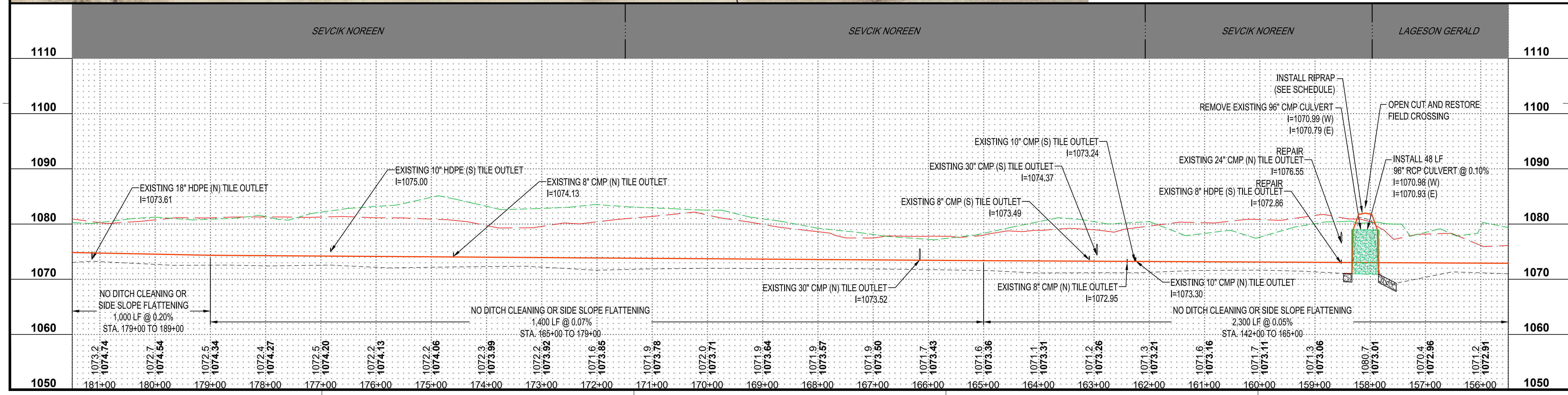
	EXISTING OPEN DITCH
	PROPOSED SIDE SLOPE FLATTENING

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
	TOP OF DITCH (RIGHT)
	TOP OF DITCH (LEFT)
	EXISTING DITCH GRADE
	EXISTING LEGAL GRADE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
BAILEY BOCCHINO
Bailey Bocchino
 DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

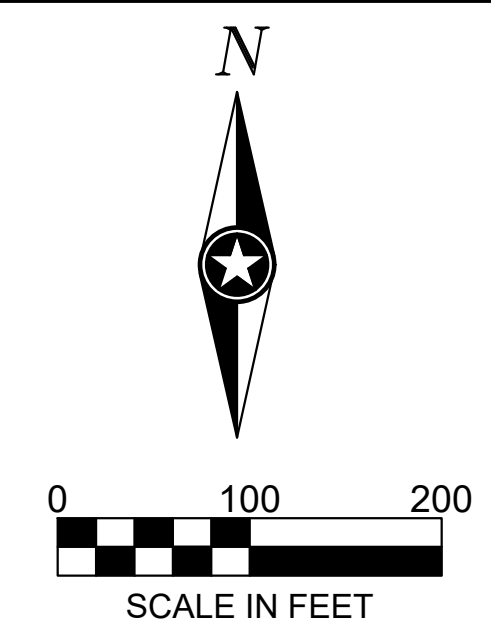
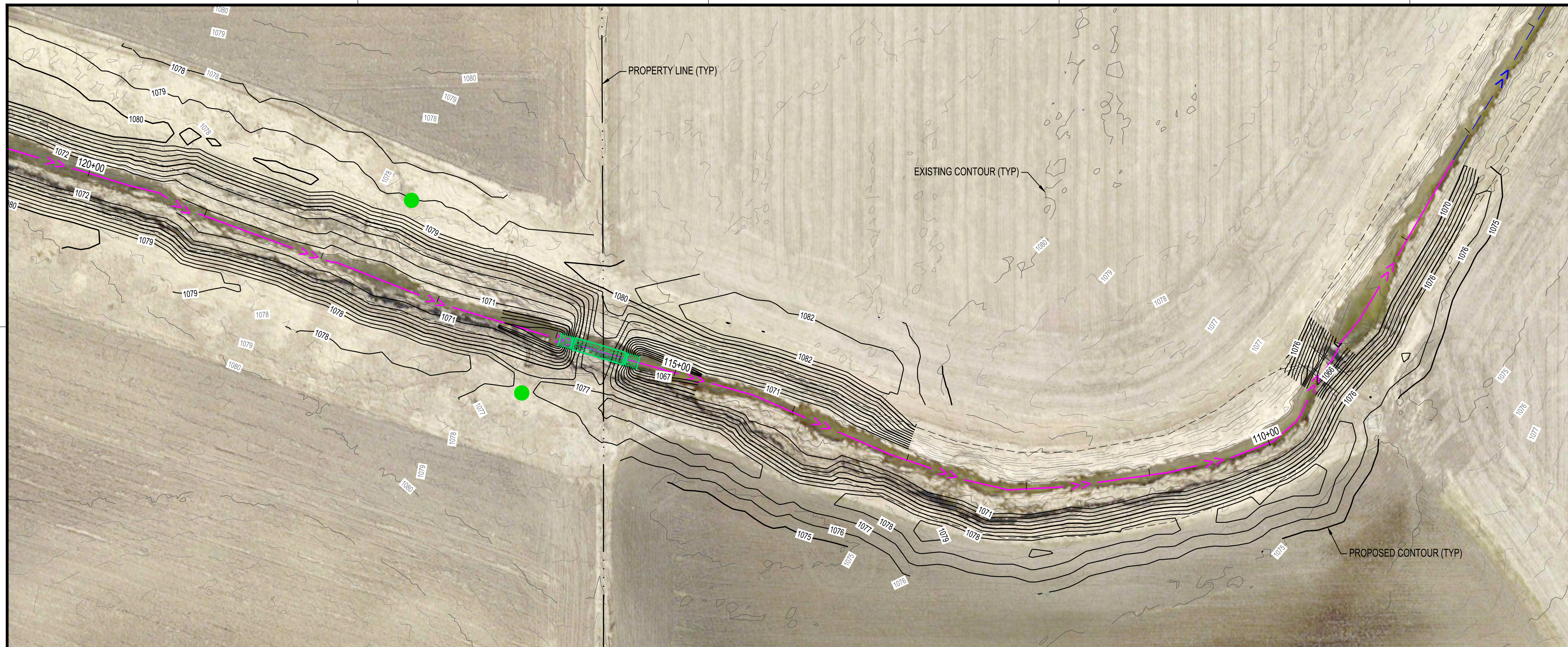


DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 MAINLINE PROFILES
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	---/---/---
CLIENT PROJECT NO.	

TITLE
PLAN - PROFILE MAILINE

SHEET
16 OF 27

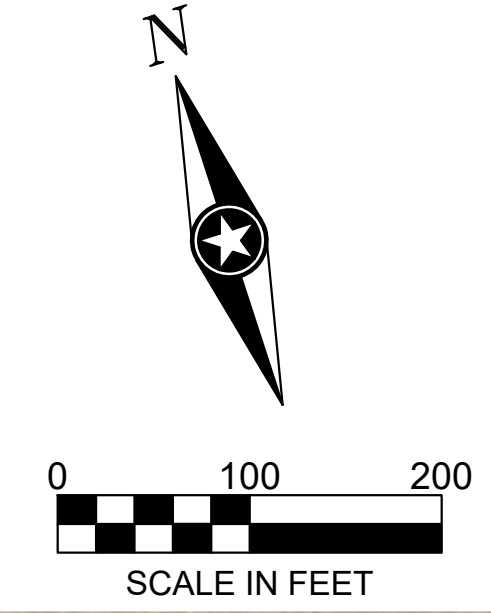
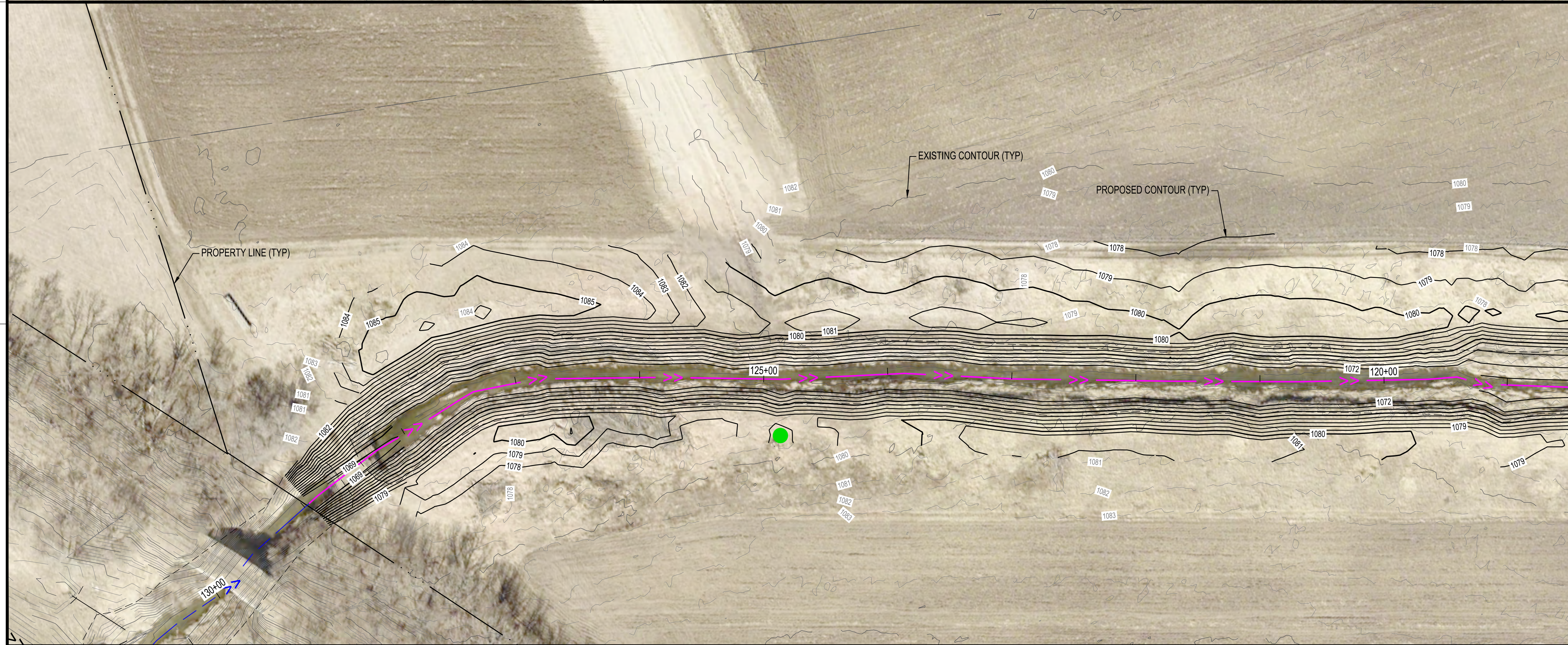


I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.



PROJECT
**RICE & STEELE
 COUNTIES
 JUDICIAL DITCH
 No. 6**

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO. 22-25087
 FILE NAME 25087 GRADING
 DRAWN BY KJH
 DESIGNED BY BPB
 REVIEWED BY BPB
 ORIGINAL ISSUE DATE --/--
 CLIENT PROJECT NO. -

TITLE
**SIDE SLOPE
 FLATTENING
 GRADING PLAN**



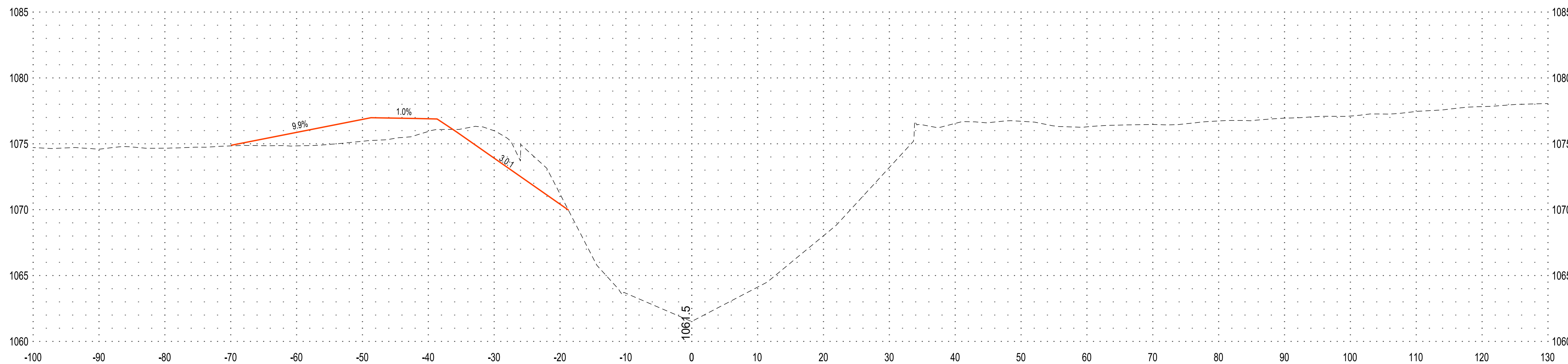
SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

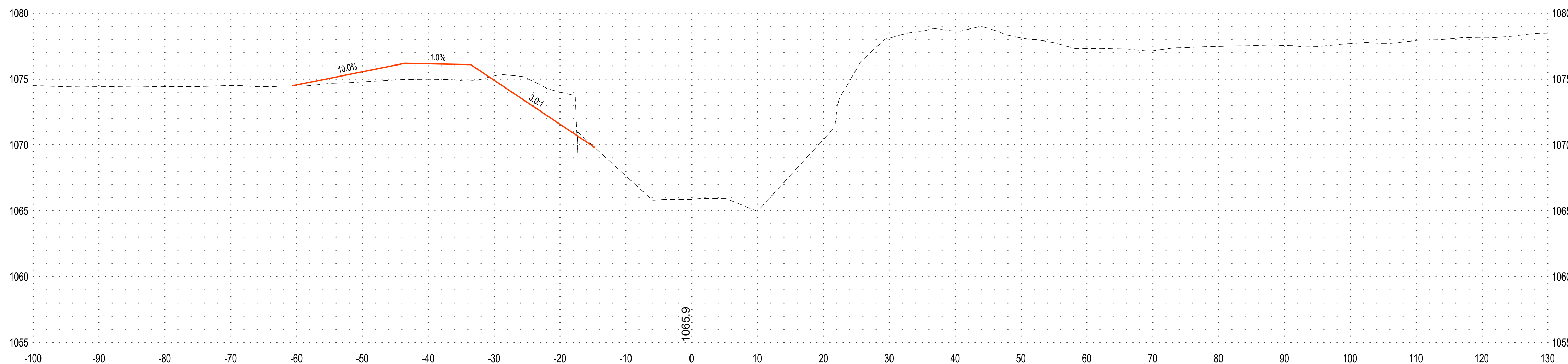
---	EXISTING GROUND
---	PROPOSED GROUND
1000.0	XXX.X - EXISTING GROUND ζ
1000.0	XXX.XX - PROPOSED GROUND ζ



108+75



108+00



107+00



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE

CROSS SECTIONS

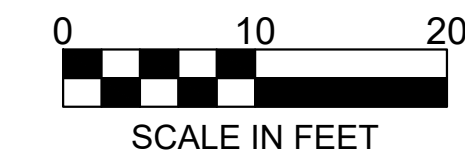
SHEET



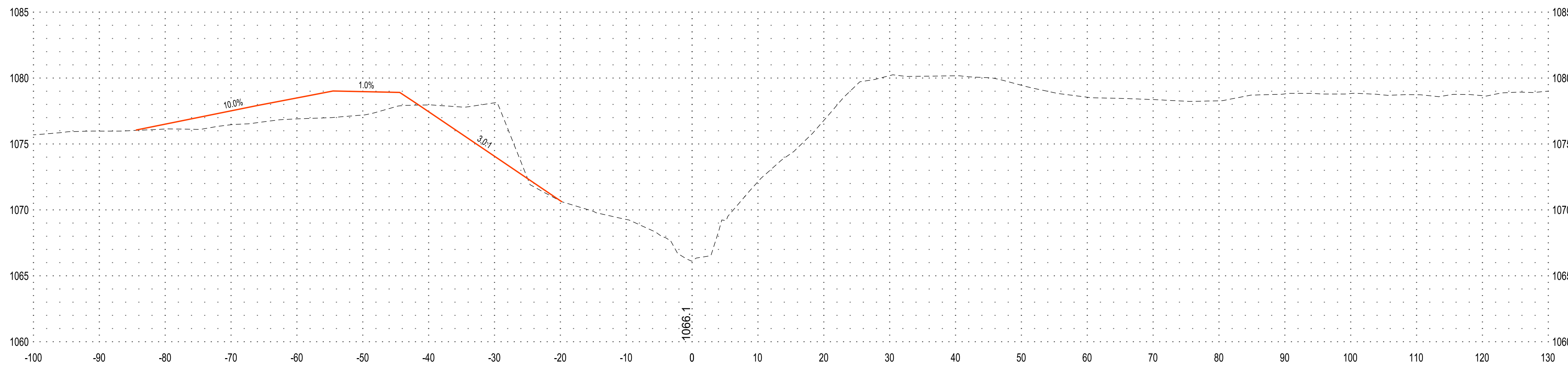
SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

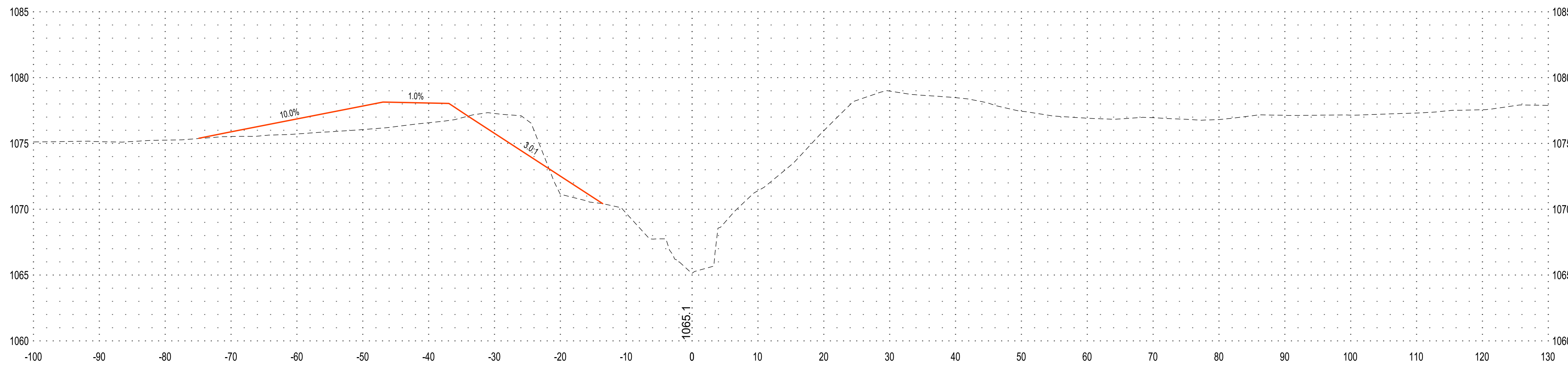
---	EXISTING GROUND
---	PROPOSED GROUND
1000.0	XXX.X - EXISTING GROUND ζ
1000.00	XXX.XX - PROPOSED GROUND ζ



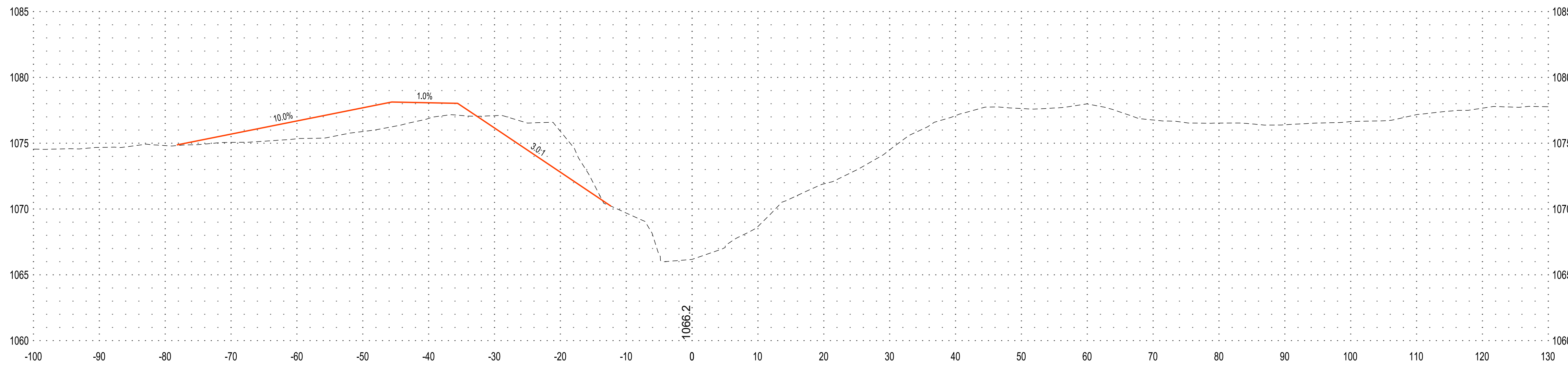
112+00



111+00



110+00



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO.: 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

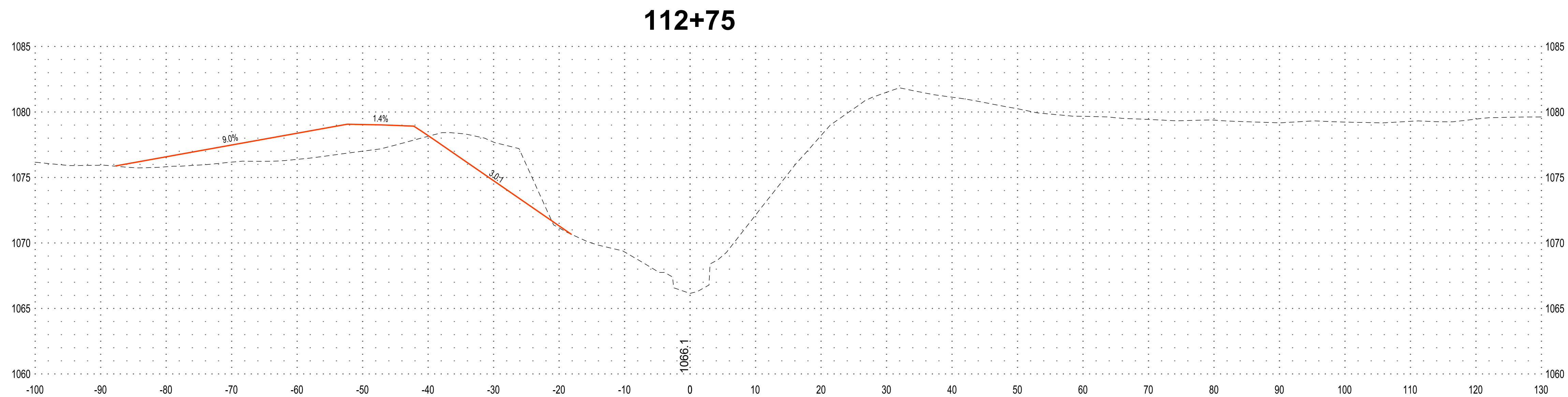
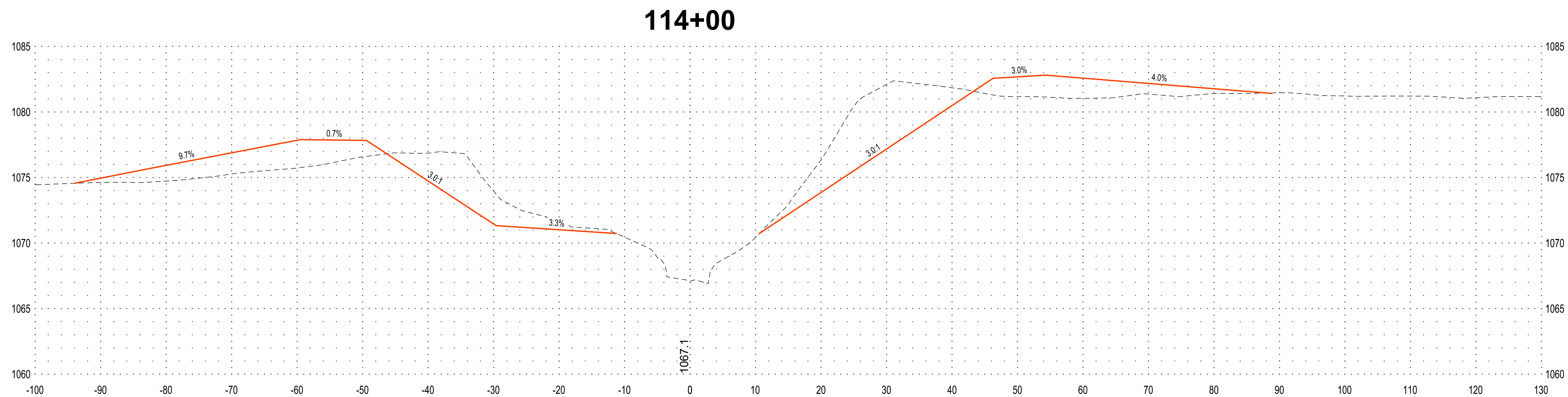
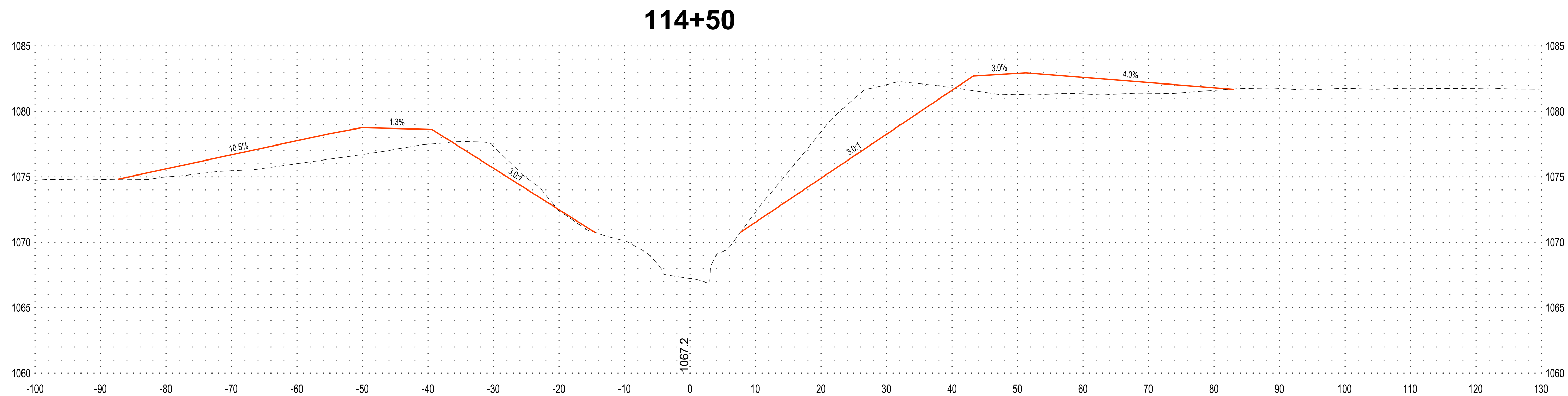
REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
CROSS SECTIONS



SECTION VIEW LEGEND	
NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
	EXISTING GROUND
	PROPOSED GROUND
	XXXX.X - EXISTING GROUND ϕ
	XXXX.XX - PROPOSED GROUND ϕ



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO

Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE

CROSS SECTIONS



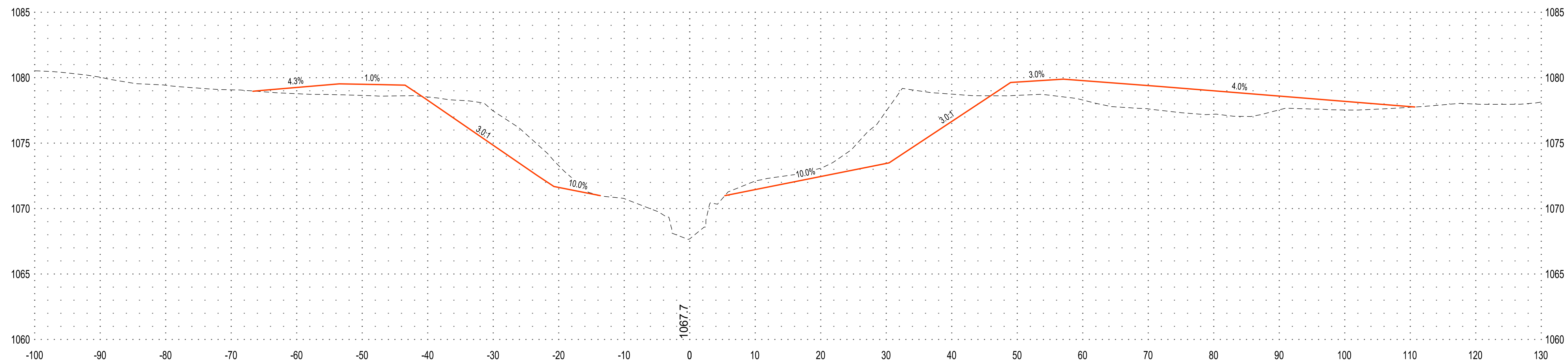
SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

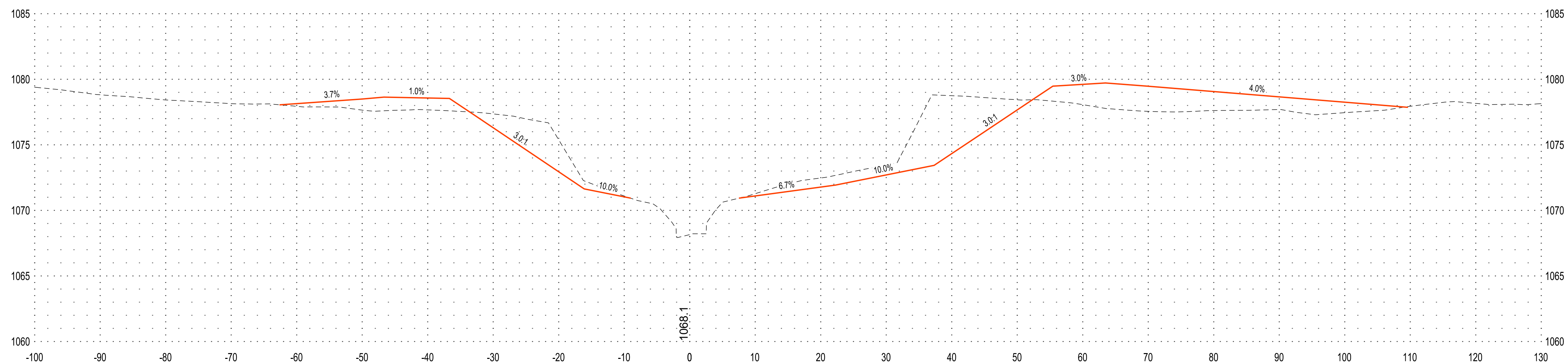
---	EXISTING GROUND
---	PROPOSED GROUND
1000.0	XXX.X - EXISTING GROUND ξ
1000.00	XXX.XX - PROPOSED GROUND ξ



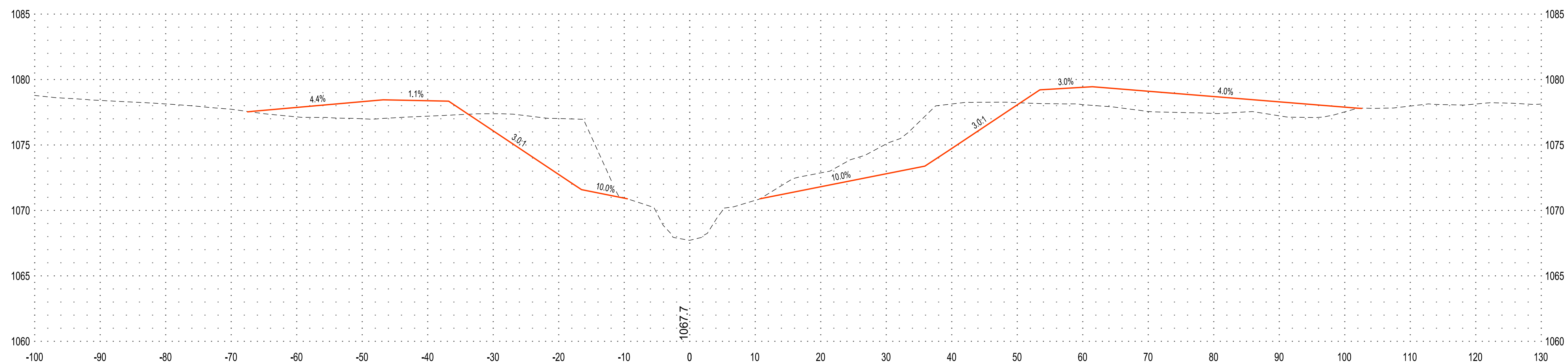
119+00



118+00



117+00



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE

CROSS SECTIONS

SHEET



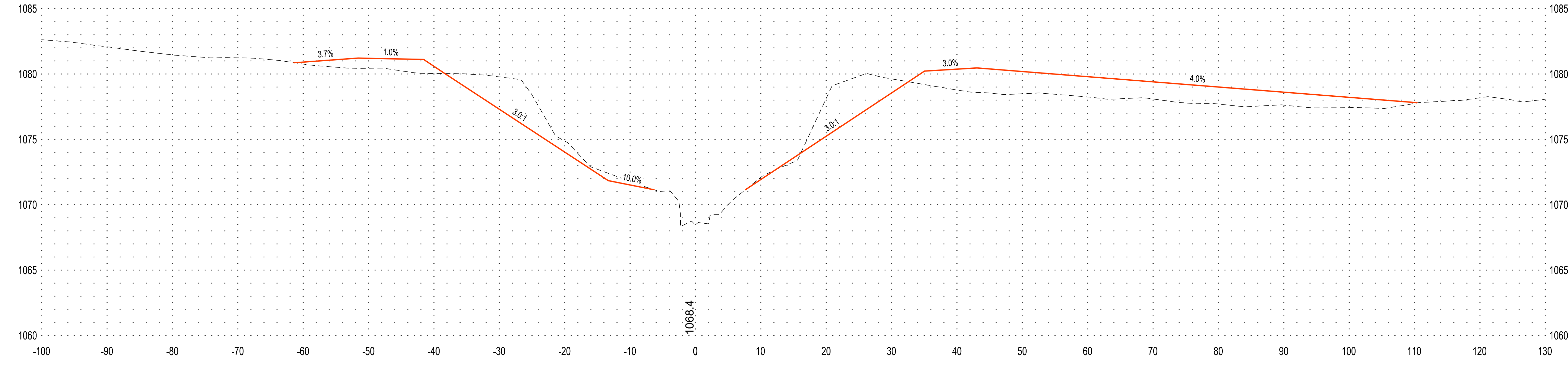
SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

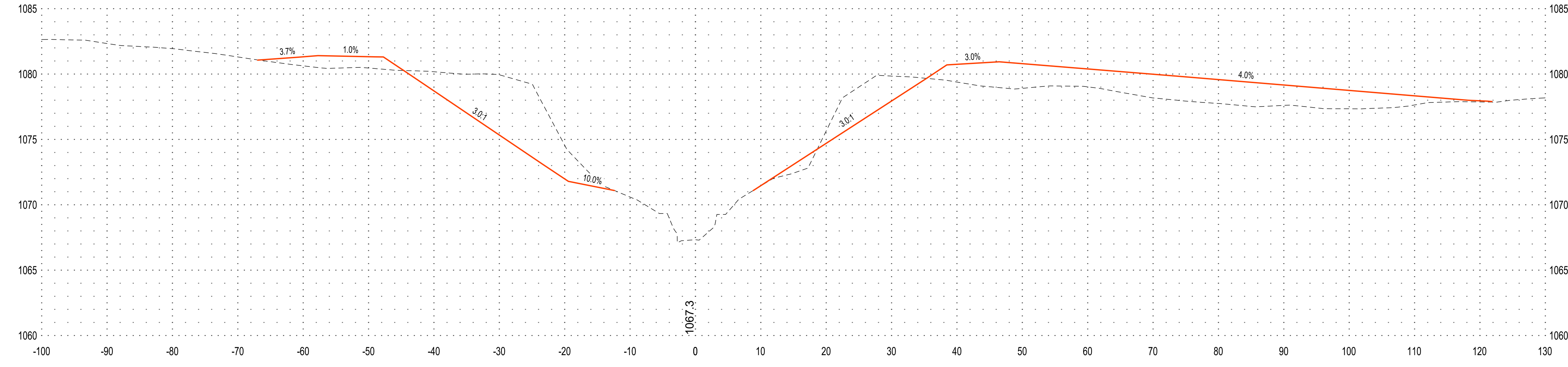
---	EXISTING GROUND
---	PROPOSED GROUND
1000.0	XXXX - EXISTING GROUND E
1000.0	XXXXX - PROPOSED GROUND E



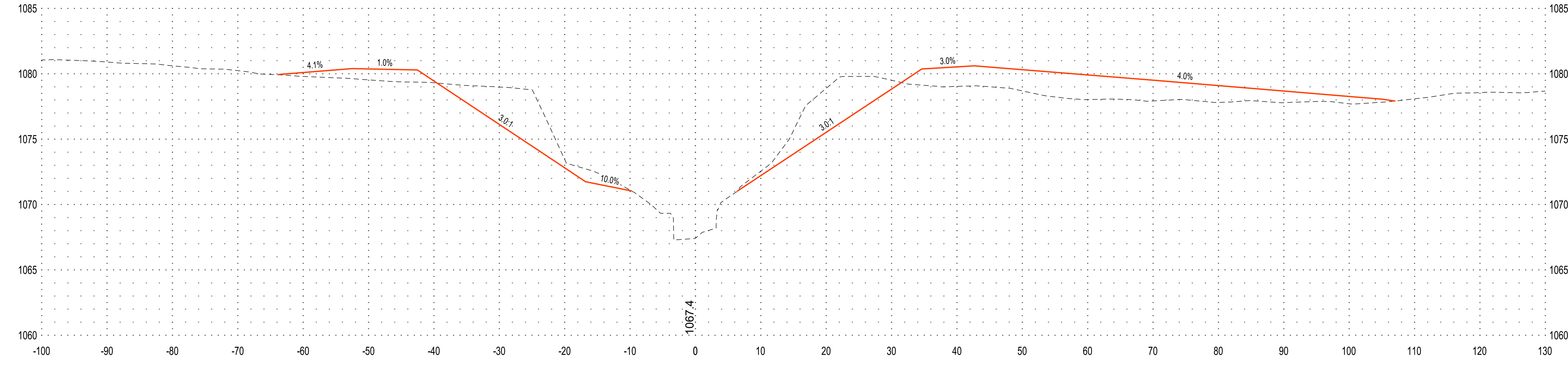
122+00



121+00



120+00



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

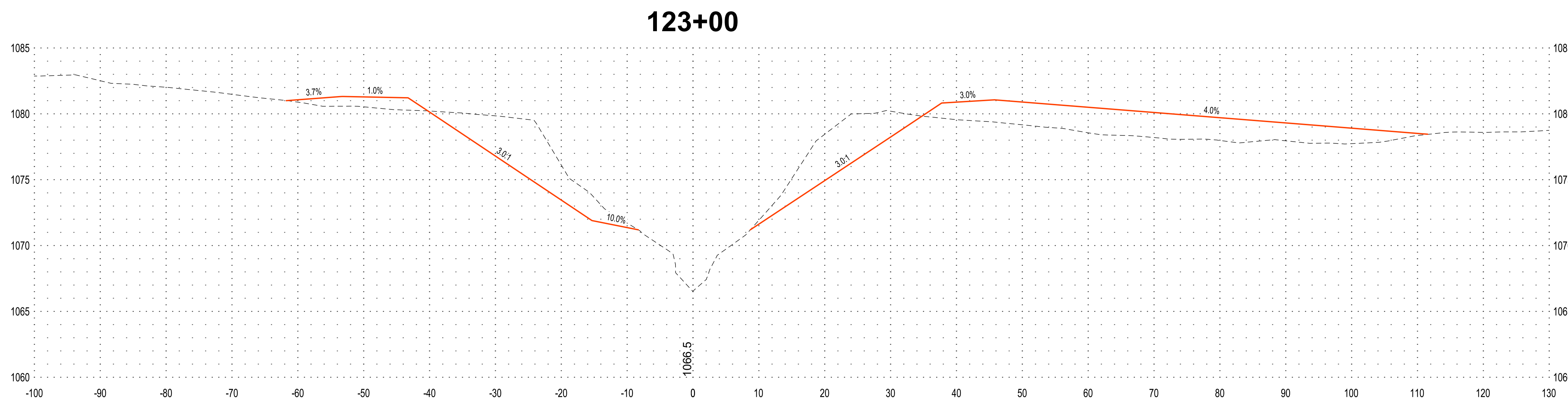
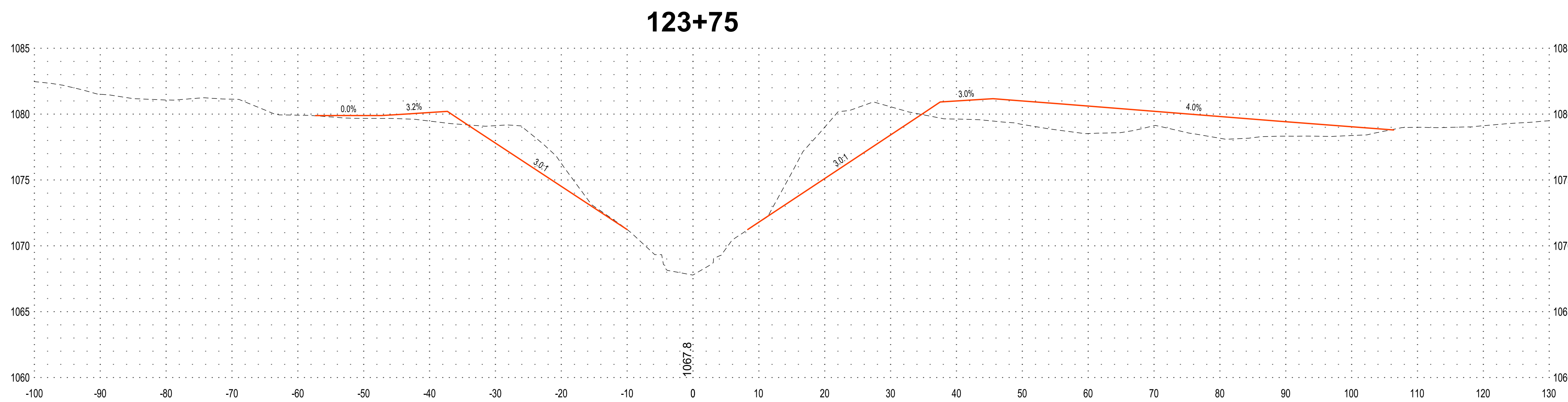
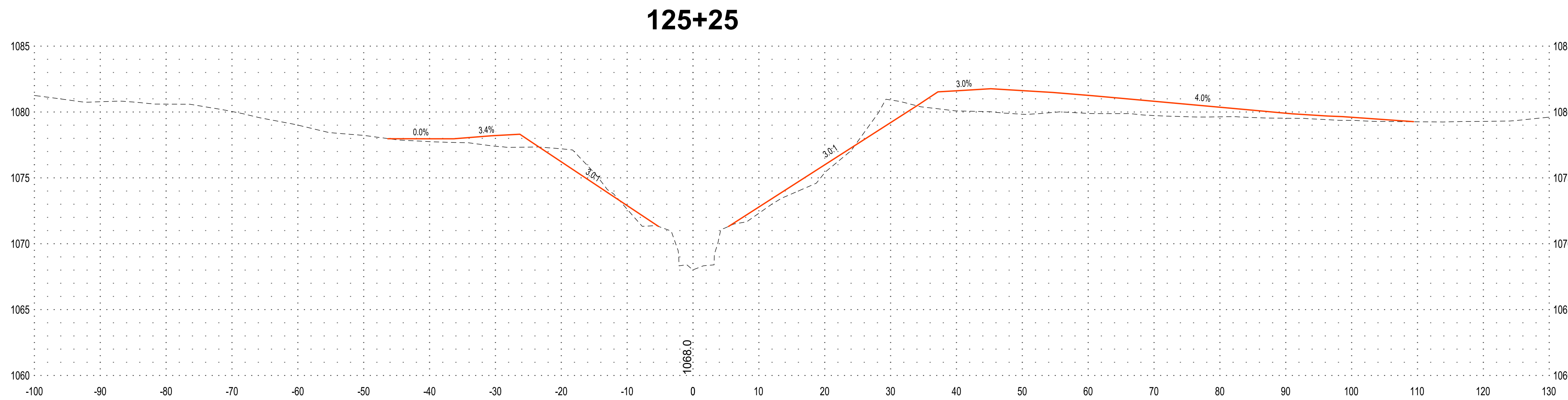
TITLE
CROSS SECTIONS



SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

---	EXISTING GROUND
---	PROPOSED GROUND
1000.0	XXX.X - EXISTING GROUND ϕ
1000.00	XXX.XX - PROPOSED GROUND ϕ



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

**RICE & STEELE
 COUNTIES
 JUDICIAL DITCH
 No. 6**

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
CROSS SECTIONS



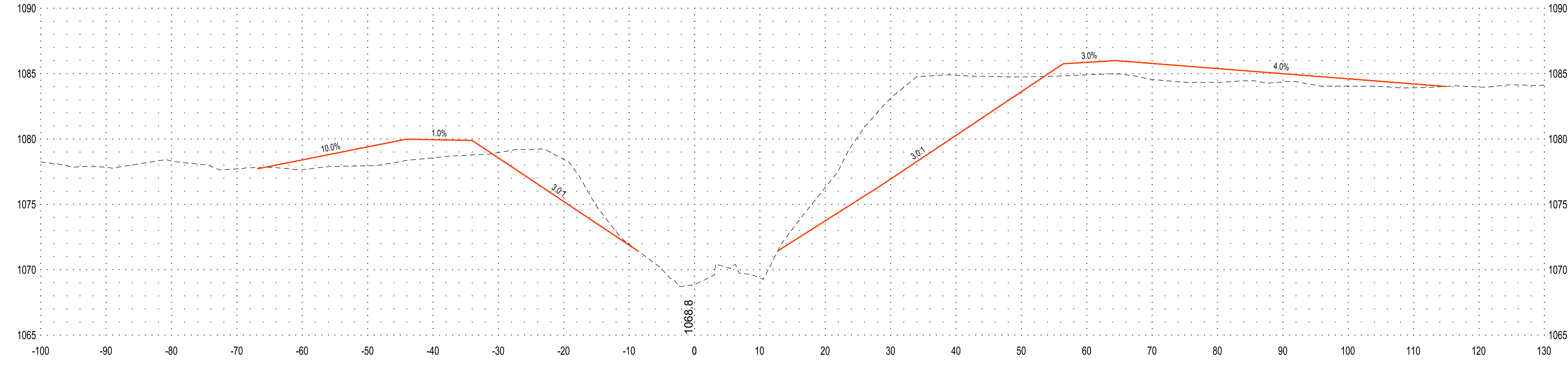
SECTION VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

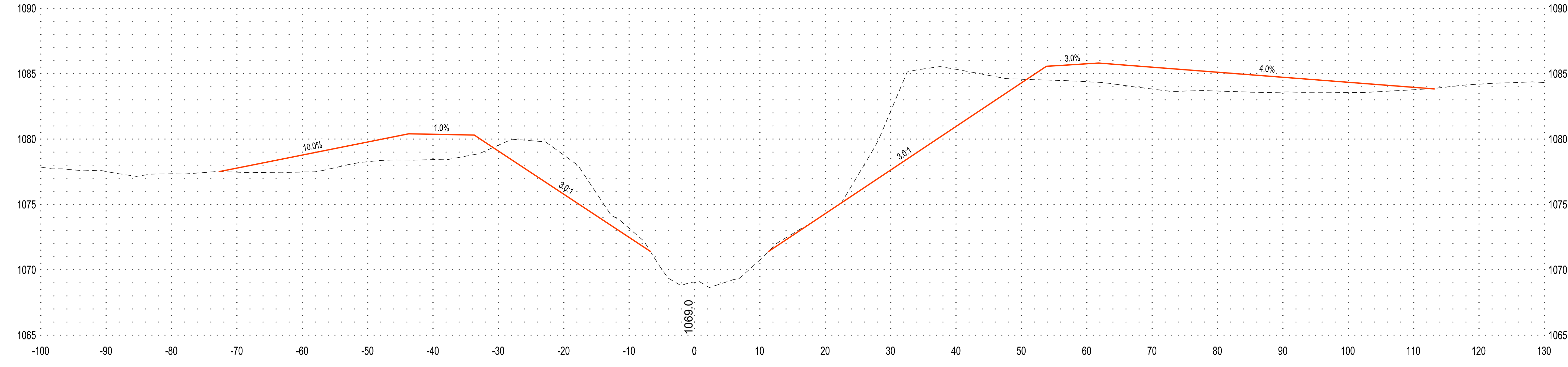
---	EXISTING GROUND
---	PROPOSED GROUND
XXXX.X	EXISTING GROUND ELEVATION
XXXX.XX	PROPOSED GROUND ELEVATION



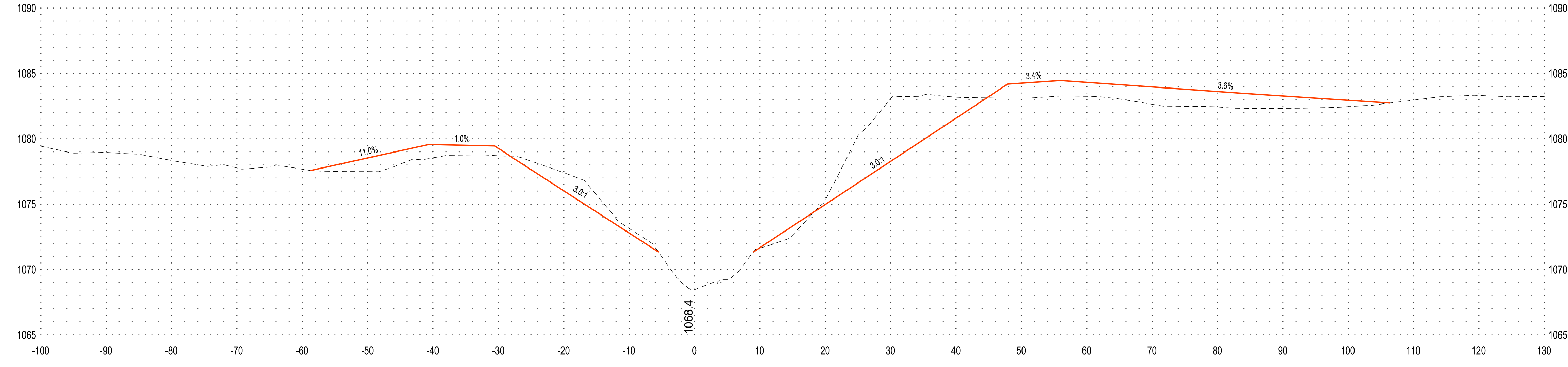
127+75



127+00



126+00



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SECTIONS
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
CROSS SECTIONS

STORM WATER POLLUTION PREVENTION PLAN NOTES:

GENERAL PROJECT INFORMATION:

PROJECT NARRATIVE:

This project consists of open ditch cleaning and side slope flattening, spoils placement, culvert replacement, and riprap placement.

RESPONSIBLE PARTIES:

Contractor and Owner are required to apply for and receive a National Pollution Discharge Elimination System (NPDES) Stormwater Construction Permit from the MPCA at least 7 days prior to beginning work.

Contractor and owner shall identify a person knowledgeable and experienced in the application of erosion prevention and sediment control BMP's who will oversee the implementation of the SWPPP.

Company: _____ Contact Person: _____
Phone: _____

Company: _____ Contact Person: _____
Phone: _____

Owner shall identify the entity responsible for the long term Operation and Maintenance of the storm water management system.

Company: _____ Contact Person: _____
Phone: _____

PROJECT AREAS:

Total project size (disturbed area) = 6.52 acres
Minimum area requiring MPCA permit = 1.00 acres

****PROJECT DOES REQUIRE AN MPCA NPDES PERMIT****

Total new impervious surface area created = 0.00 acres

Minimum area of new impervious surface created requiring permanent storm water management = 1.00 acres

RECEIVING WATERS:

Surface waters which will receive storm water from the site within 1 mile (aerial radius measurement) of project boundary. Include waters shown on USGS 7.5 minute quad and all waters identified in Section 23 of the permit.

Name of Water Body	Type (ditch, pond, wetland, lake, etc.)	Special or Impaired Water?
STRAIGHT RIVER	RIVER	IMPAIRED

Additional BMPs together with enhanced runoff controls are required for discharges to Special or Impaired waters within 1 mile of the site. (See Section 23)

CONSTRUCTION ACTIVITY NOTES:

EROSION PREVENTION:

Construction of silt fence and all other erosion control measures shall be complete before other construction activity occurs. Use phased construction wherever practical and establish turf as soon as possible to minimize sediment transport.

Turf establishment or temporary seeding or mulching of all exposed soil not being actively worked should be practiced following the table below:

Type of Slope or Disturbance Area	Time Area can Remain Open Without Being Actively Worked	
	Normal Water	Special/Impaired
Steeper than 3:1	14 days	7 days
10:1 to 3:1	14 days	7 days
Flatter 10:1	14 days	7 days
Ditch Buffers	14 days	7 days
Ditch Side Slopes	2 days	
Within 200 Feet of Surface Water	1 day	

Temporary cover during construction is incidental.

Pipe outlets must be provided with permanent energy dissipation within 24 hours after connection to a surface water.

All exposed non-tillable soils shall be seeded at the earliest possible time to prevent/reduce erosion.

Stabilize all areas of the site prior to the onset of winter. any work still being performed will be snow mulched, seeded, and blanketed within the time frames in the NPDES permit.

Provide perimeter control around all stock piles. Place BMP a minimum 5 feet from the toe of the slope where feasible. Do not place stockpiles on natural buffer areas, surface waters or stormwater conveyances.

Topsoil berms must be stabilized in order to be considered perimeter control BMPs. use rapid stabilization method 2, 3, or 4. the seed mix used in rapid stabilization may be substituted as follows:

- A. Single year construction between May 1 - August 1, seed with 21-111
- B. Single year construction between August 1 and October 31, seed with 21-112
- C. Multi year construction seed with 22-111

A. Seed in disturbed areas within the right of way shall be MnDOT mixture 25-142 and shall be placed in accordance with MnDOT 2575 with MnDOT category 3 erosion control blanket. Seed shall meet MnDOT Specification 3876. Erosion control blanket shall be in accordance with MnDOT 3885.

B. Seed in 16.5' buffer areas shall be the Buffer Blend seed mix (or as specified on plans), and shall be placed in accordance with MnDOT 2575. Seed shall meet MnDOT Specification 3876. Mulch shall be MnDOT 3882 Type 3 (MCIA certified weed free mulch) or Type 8 Mulch with bonded fiber matrix. Type 3 Mulch shall be applied at a rate of 2.0 tons/acre. Type 3 Mulch shall be disc anchored. Type 8 Mulch shall be applied at a rate of 4000 lbs/acre and spread evenly.

C. Seed within pond and two-stage ditch areas shall be Buffer Blend seed mix (or as specified on plans), shall be placed in accordance with MnDOT 2575. Seed shall meet MnDOT Specification 3876. Mulch shall be MnDOT 3882 Type 8 Mulch.

Additional erosion prevention measures may be found in the permit and MPCA's Best Management Practices.

SEDIMENT CONTROL PRACTICES:

Construction of silt fence and all other erosion control measures shall be complete prior to land disturbing activities occur.

Inlet protection shall be installed and maintained until turf or pavement has been established.

The contractor shall be responsible to control erosion from leaving the construction zone. All eroded material that leaves the construction zone shall be collected by the contractor and returned to the site at the contractor's expense.

Contractor shall not disturb the 16.5' buffer strip after permanent seeding has been completed. Any work needing to be done in or around the buffer shall be re-seeded within the timeframe specified above.

Contractor shall take the necessary steps to minimize soil compaction and preserve topsoil on site.

INSPECTION AND MAINTENANCE:

The operator must routinely inspect the construction site once every seven (7) days during active construction and within 24 hours of a rainfall event greater than 0.5 inches in a 24 hour period.

All inspections performed during construction must be recorded and records retained with the SWPPP in accordance with the Stormwater Permit. Contractor is responsible for keeping a record of all rainfall data & erosion control maintenance until final establishment of turf.

Perimeter & inlet controls must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/2 of the height of the fence. Erosion control and other BMP's must be replaced, repaired, or supplemented when they reach 50% design load.

See MPCA website for example of SWPPP inspection and maintenance forms.

DEWATERING AND BASIN DRAINING:

Dewater water directly into pipes or intakes where possible. Use appropriate energy dissipation measures when possible on all discharges.

Dewatering practices cannot cause nuisance conditions, erosion or in receiving channels or inundation of wetlands resulting in adverse impacts.

POLLUTION PREVENTION:

All solid waste collected from the construction site must be disposed in accordance with all applicable regulations.

All hazardous materials (oil, gasoline, fuel, paint, etc) must be properly stored to prevent spills, leaks, or other discharge. Storage areas shall provide secondary containment and a hazardous materials spill kit. Equipment fueling and maintenance shall occur in a designated, contained area. Storage and disposal of hazardous waste must be in compliance with all applicable regulations. All runoff containing any hazardous material must be properly collected and disposed. No engine degreasing shall be allowed on site.

All sanitary wastes must be collected from portable units on site by a licensed sanitary waste management contractor. The units must be secured and shall be maintained on a regular basis as needed to prevent overflowing.

Emergency Spill Plan - The Contractor is responsible for all construction personnel to be informed of the manufacturers' recommended spill cleanup methods, and the location of that information and cleanup supplies. The Contractor shall modify the SWPPP as required within seven calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. Plans must identify measures to prevent the reoccurrence of such releases. If a spill occurs, the following steps shall be followed:

1. Observe the safety precautions associated with the spilled material. Stop the source of the spill, if you can do so safely. Call 911 if fire or public safety hazards are created.
2. Contain the spilled material. Dirt, sand, or any semi-impermeable material may be used to create a containment structure to prevent the material from flowing.
3. Report the spill to the Minnesota Duty Officer at (651) 649-5451.
4. Clean up the spilled material and dispose of the wastes properly. With the exception of used oil, waste generated from petroleum spills that have been reported and cleaned up immediately are exempt from Minnesota's Hazardous Waste Rules. Waste generated from used oil spills must be sent to a facility for energy recovery.

The contractor is responsible for monitoring air pollution and ensuring it does not exceed levels set by local, state, or federal regulations. This includes dust created by work being performed on the site. Air pollution and dust control correction is considered incidental to the unit bid prices for which work is being performed. Additional dust control measures may be required by the Engineer.

Concrete washout onsite: All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

FINAL STABILIZATION:

The operator must ensure final stabilization of the site. The operator must submit a Notice of Termination within 30 days after final stabilization is complete or control has been passed to another owner. All temporary erosion control measures and BMP's must be removed as part of the final site stabilization.

The storm water permit further defines final stabilization and its requirements.



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCCHINO

Bailey Bocchino

DATE: 11/14/24 LIC. NO. 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO. 22-25087

FILE NAME 25087 SWPPP

DRAWN BY KJH

DESIGNED BY BPB

REVIEWED BY BPB

ORIGINAL ISSUE DATE --/--/--

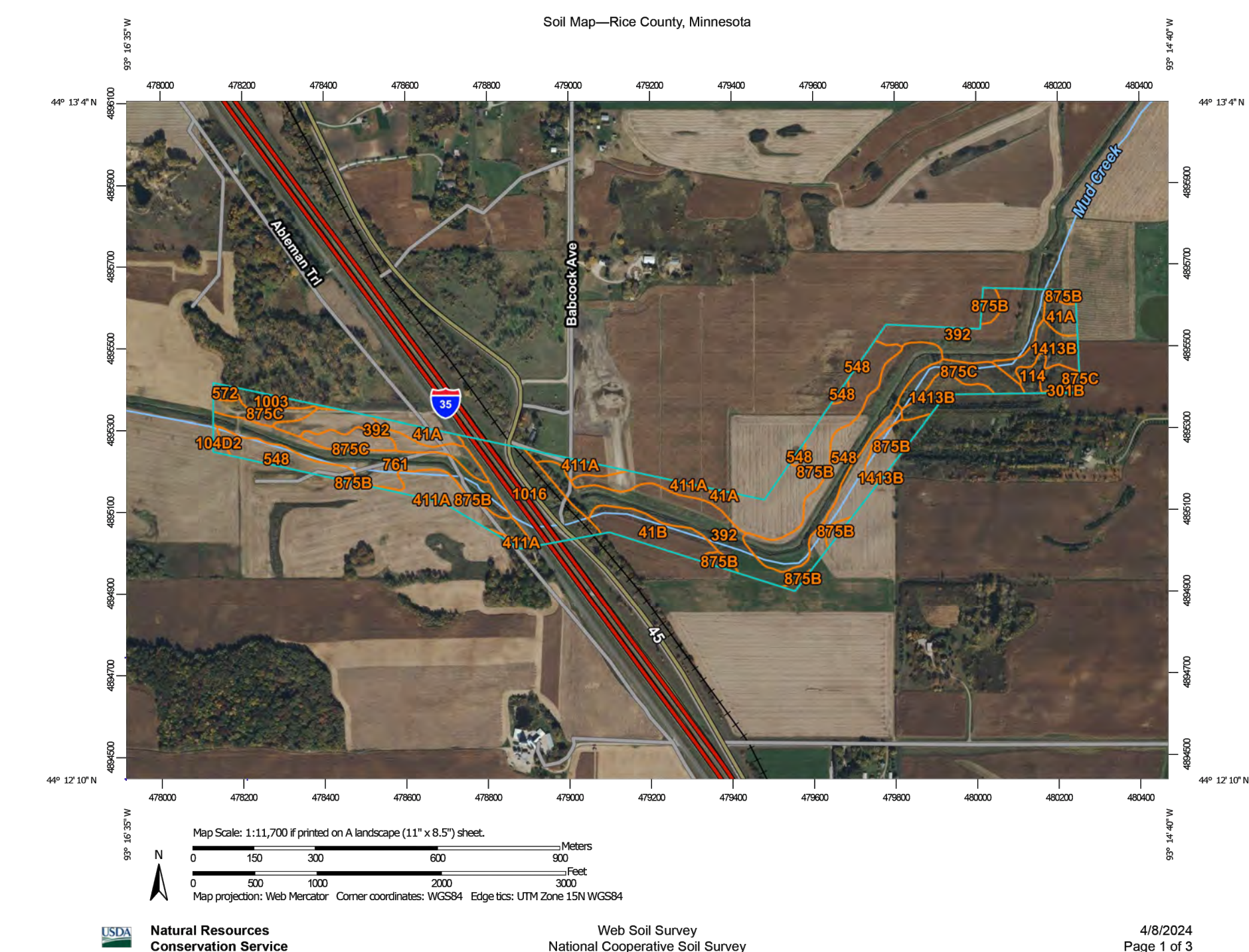
CLIENT PROJECT NO. -

TITLE STORMWATER POLLUTION PREVENTION PLAN NOTES

SHEET

25

OF 27

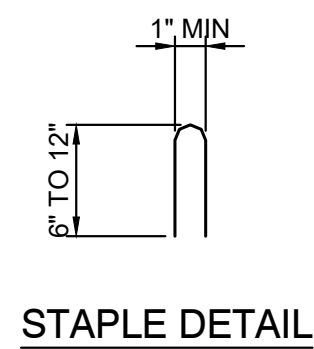
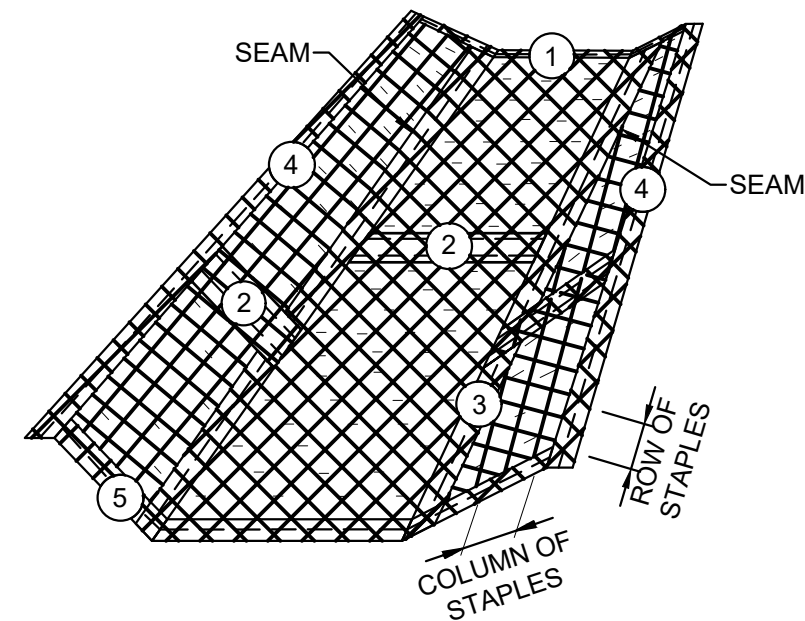


Map Unit Legend

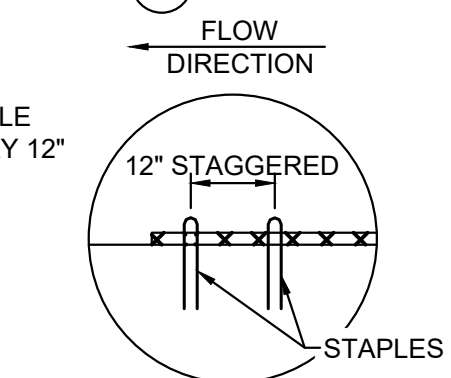
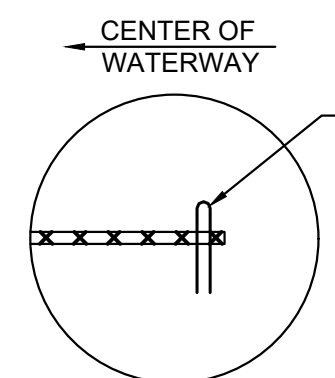
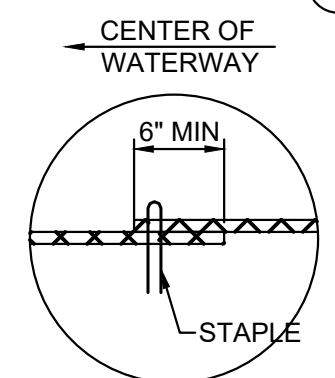
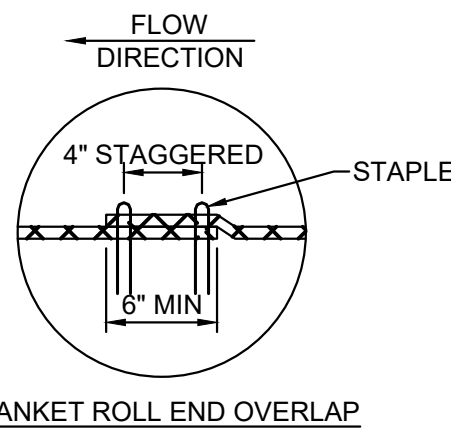
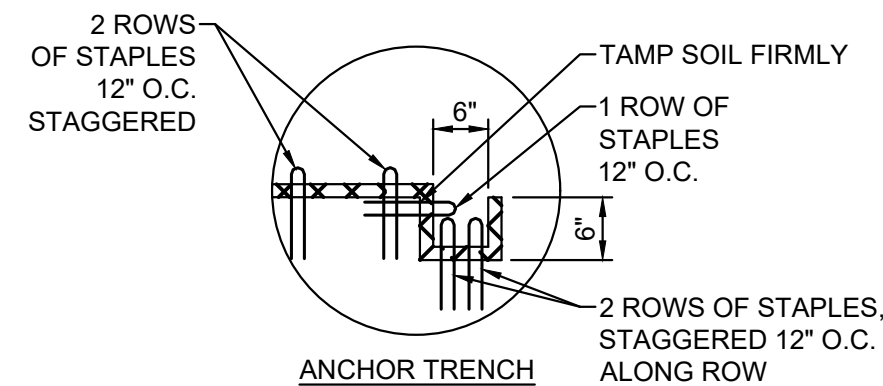
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41A	Estherville sandy loam, 0 to 2 percent slopes	3.4	3.0%
41B	Estherville sandy loam, 2 to 6 percent slopes	4.8	4.2%
104D2	Hayden loam, 10 to 22 percent slopes, moderately eroded	0.3	0.3%
114	Glencoe clay loam, 0 to 1 percent slopes	1.1	0.9%
301B	Lindstrom silt loam, till plain, 2 to 6 percent slopes	0.3	0.2%
392	Biscay clay loam, 0 to 2 percent slopes	27.6	24.4%
411A	Waukegan silt loam, 0 to 2 percent slopes	2.0	1.7%
548	Medo muck, depressional, 0 to 1 percent slopes	15.6	13.7%
572	Lowlein sandy loam, 1 to 5 percent slopes	0.5	0.5%
761	Epsom silty clay loam, 0 to 2 percent slopes, frequently flooded	9.2	8.1%
875B	Hawick-Estherville complex, 2 to 8 percent slopes	23.6	20.7%
875C	Hawick-Estherville complex, 6 to 12 percent slopes	9.0	7.9%
1003	Anthropogenic Udothents-Pits-Dumps complex, abandoned, 2 to 45 percent slopes	1.3	1.2%
1016	Udorthents, loamy (cut and fill land)	9.7	8.5%
1413B	Littleton silt loam, till substratum, 1 to 4 percent slopes	5.4	4.7%
Totals for Area of Interest		114.1	100.0%

25-142 AGRICULTURAL ROADSIDE				
COMMON NAME	SCIENTIFIC NAME	RATE (LB/AC)	% OF MIX (BY WT)	
Fowl Bluegrass	<i>Poa palustris</i>	6.00	13.33%	
Smooth Brome	<i>Bromus inermis</i>	7.75	17.23%	
Slender Wheatgrass	<i>Elymus trachycaulus</i>	2.00	4.45%	
Perennial Ryegrass	<i>Lolium perenne</i>	13.50	30.00%	
Switchgrass	<i>Panicum virgatum</i>	1.50	3.33%	
Timothy	<i>Phleum pratense</i>	1.75	3.89%	
Grasses Subtotal		32.50	72.23%	
Alfalfa	<i>Medicago sativa</i>	12.50	27.77%	
Forbs Subtotal		12.50	27.77%	
Total		45.00	100.00%	

35-541 MESIC PRAIRIE SOUTHWEST				
COMMON NAME	SCIENTIFIC NAME	RATE (LB/AC)	% OF MIX (BY WT)	
Big Bluestem	<i>Andropogon gerardii</i>	0.90	7.49%	
Side-Oats Grama	<i>Bouteloua curtipendula</i>	0.90	7.49%	
Nodding Wild Rye	<i>Elymus canadensis</i>	0.90	7.46%	
Slender Wheatgrass	<i>Elymus trachycaulus</i>	0.90	7.46%	
Green Needle Grass	<i>Nassella viridula</i>	0.44	3.67%	
Switchgrass	<i>Panicum virgatum</i>	0.16	1.30%	
Western Wheatgrass	<i>Pascopyrum smithii</i>	0.50	4.15%	
Little Bluestem	<i>Schizachyrium scoparium</i>	1.50	12.50%	
Indian Grass	<i>Sorghastrum nutans</i>	1.50	12.54%	
Total Grasses		7.70	64.06%	
Canada Milk Vetch	<i>Astragalus canadensis</i>	0.06	0.53%	
Partridge Pea	<i>Chamaecrista fasciculata</i>	0.10	0.84%	
White Prairie Clover	<i>Dalea candida</i>	0.03	0.24%	
Purple Prairie Clover	<i>Dalea purpurea</i>	0.07	0.61%	
Canada Tick Trefol	<i>Desmodium canadense</i>	0.05	0.45%	
Narrow-Leaved Purple Coneflower	<i>Echinacea angustifolia</i>	0.08	0.65%	
Over-Eye	<i>Heliopsis helianthoides</i>	0.06	0.50%	
Rough Blazing Star	<i>Liatris aspera</i>	0.03	0.28%	
Great Blazing Star	<i>Liatris pycnostachya</i>	0.02	0.21%	
Wild Bergamot	<i>Monarda fistulosa</i>	0.04	0.29%	
Silf Goldenrod	<i>Oligoneuron rigidum</i>	0.03	0.28%	
Gray-Headed Coneflower	<i>Ratibida pinnata</i>	0.07	0.61%	
Black-Eyed Susan	<i>Rutbeckia hirta</i>	0.06	0.49%	
Smooth Aster	<i>Symphyotrichum laeve</i>	0.03	0.25%	
Blue Vervain	<i>Verbena hastata</i>	0.07	0.61%	
Hoary Vervain	<i>Verbena stricta</i>	0.05	0.41%	
Golden Alexanders	<i>Zizia aurea</i>	0.25	2.06%	
Total Forbs		1.10	9.31%	
Oats	<i>Avena sativa</i>	3.20	26.63%	
Total Cover Crop		3.20	26.63%	
Totals		12.00	100.00%	



STAPLE DETAIL



BLANKET SIDE OVERLAP

BLANKET SIDE EDGE

TERMINAL END

3

4

5

EROSION CONTROL BLANKET INSTALLATION

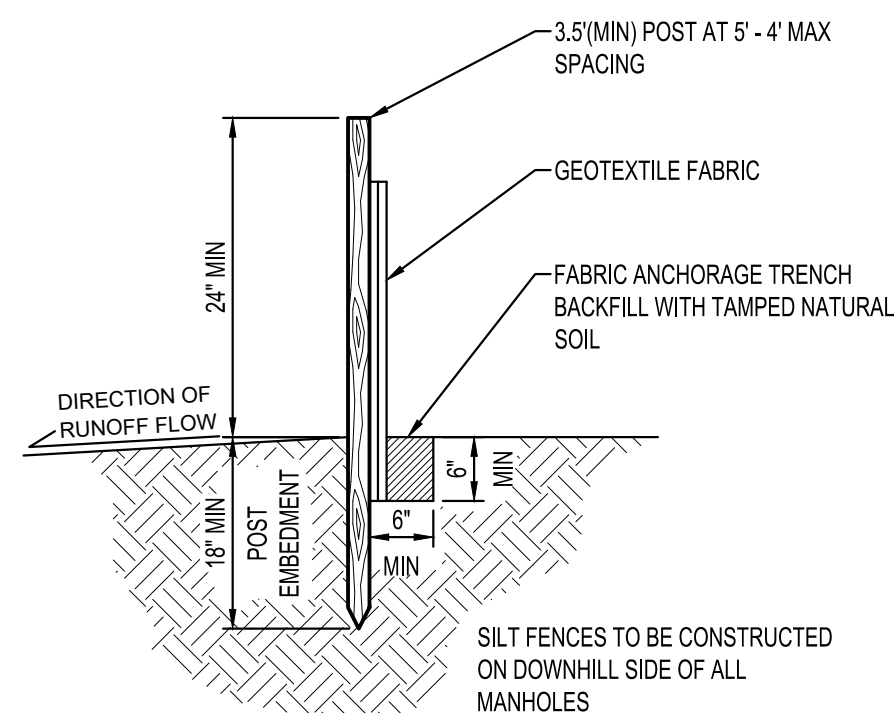
NTS

KEY NOTES

- BURY UPSTREAM END OF MAT IN A TRENCH 6" WIDE BY 6" DEEP AND STAPLED IN STAGGERED ROWS ACROSS THE WIDTH.
- FOR JOINING ENDS OF ROLLS, OVERLAP END OF UP SLOPE MAT A MINIMUM OF 6" OVER DOWN SLOPE MAT (SHINGLE STYLE). USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART.
- MATS ON SIDE SLOPES SHALL OVERLAP A MINIMUM OF 6" OVER THE MAT BELOW (SHINGLE STYLE). STAPLE OVERLAP AT 12" INTERVALS.
- THE OUTER EDGE ALONG SIDES OF THE MAT SHALL BE STAPLED EVERY 12".
- DOWNSTREAM (TERMINAL) END OF BLANKET SHALL BE STAPLED WITH A DOUBLE ROW OF STAGGERED STAPLES 12" APART.

NOTES:

- INSTALL EROSION CONTROL BLANKET (ECB) OVER WATERWAYS AS SHOWN IN THE STORM WATER POLLUTION PREVENTION PLAN.
- THE ECB SHALL CONFORM TO MnDOT STANDARD SPECIFICATIONS SECTION 3885.
- PREPARE SOIL PRIOR TO INSTALLING ECB, INCLUDING SEEDING AND FERTILIZING.
- THE ECB SHALL BE PLACED IN FIRM CONTACT WITH THE SOIL AND NOT BE ALLOWED TO BRIDGE OVER SURFACE IRREGULARITIES. THE MAT SHALL NOT BE STRETCHED.
- START LAYING THE MATS BY ROLLING CENTER MAT IN THE DIRECTION OF FLOW, CENTERED ON THE CENTERLINE OF WATERWAY. THERE SHALL NOT BE AN OVERLAP OF MATS AT THE CENTER OF THE WATERWAY.
- THE ECB SHALL BE ANCHORED, OVERLAPPED, AND STAPLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS. IF NO MANUFACTURER'S INSTRUCTIONS ARE AVAILABLE, INSTALL THE MAT PER DETAIL.
- STAPLES SHALL BE "U" SHAPED, 0.12" DIAMETER WIRE OR GREATER (#11 GAUGE). (SEE STAPLE DETAIL FOR DIMENSIONS)
- STAPLES ARE TO BE PLACED ALTERNATELY IN COLUMNS (IN THE DIRECTION OF THE WATERWAY) 2' APART AND IN ROWS (ACROSS THE WATERWAY) 3' APART THROUGHOUT THE AREA COVERED BY THE ECB.



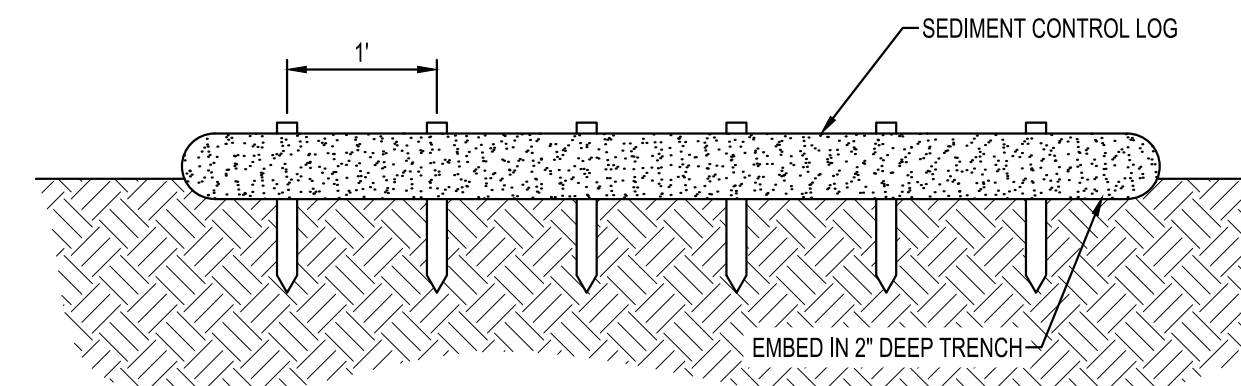
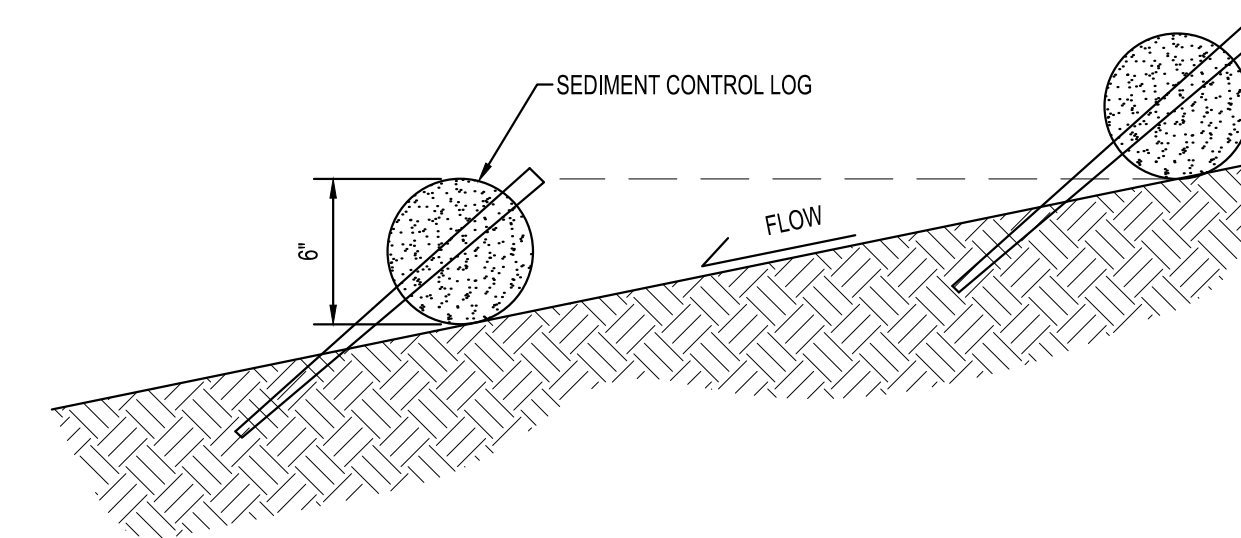
SILT FENCE

SILT FENCE

NTS

NOTES:

- INSTALLATION, MAINTENANCE, AND REMOVAL OF SILT FENCE IN ACCORDANCE WITH CONTRACT DOCUMENTS SHALL BE INCIDENTAL TO THE BID ITEM.
- SILT FENCE SHALL BE PAID FOR BY THE U.F. REFER TO PAYMENT SCHEDULE IN CONTRACT DOCUMENTS.



NOTES:

- SEDIMENT CONTROL LOGS TO BE 6" DIAMETER UNLESS OTHERWISE NOTED.
- STAKED INTO THE GROUND WITH WOOD STAKES.
- WOOD STAKES ARE A MINIMUM OF 2"x16"x12" UNLESS PRECLUDED BY PAVED SURFACE OR ROCK.
- WOOD STAKES DRIVEN THROUGH BACK HALF OF SEDIMENT CONTROL LOG AT AN APPROXIMATE ANGLE OF 45° WITH THE TOP OF STAKE POINTING UP STREAM.
- WHEN MORE THAN ONE SEDIMENT CONTROL LOG IS NEEDED, OVERLAP ENDS A MINIMUM OF 6" AND STAKE.

SEDIMENT CONTROL LOG STAKING

NTS



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCCHINO

Bailey Bocchino

DATE: 11/14/24 LIC. NO.: 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT

RICE & STEELE COUNTIES JUDICIAL DITCH No. 6

RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO. 22-25087

FILE NAME 25087 SWPPP

DRAWN BY KJH

DESIGNED BY BPB

REVIEWED BY BPB

ORIGINAL ISSUE DATE --/--

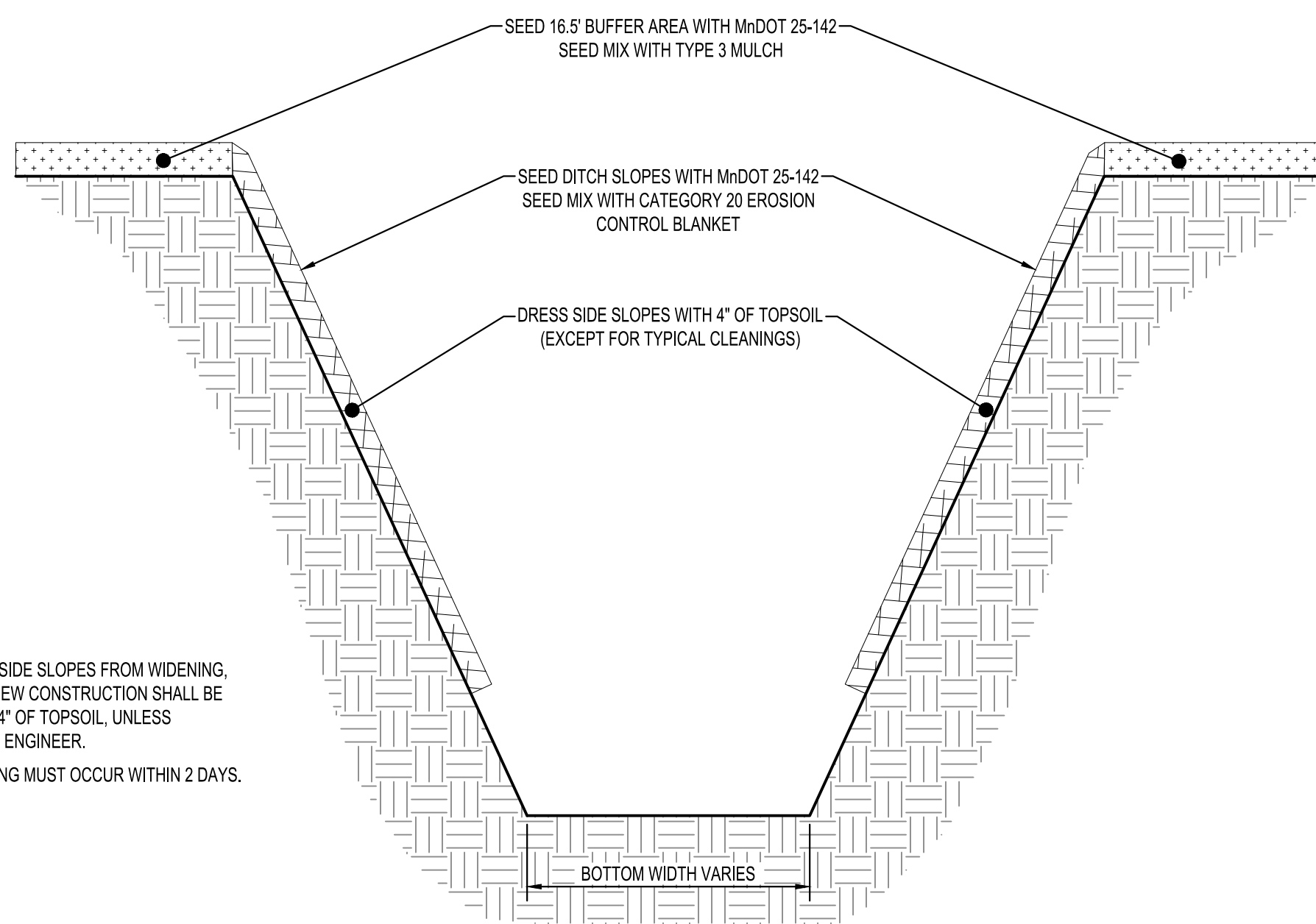
CLIENT PROJECT NO. -

TITLE STORMWATER POLLUTION PREVENTION DETAILS

SHEET

26

OF 27

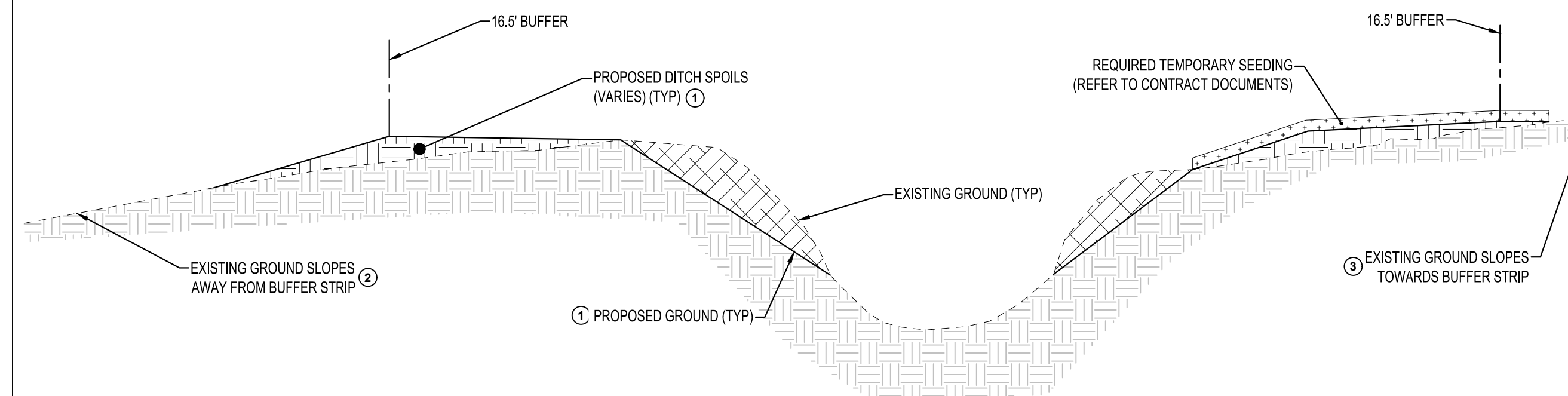


NOTES:

- DISTURBED DITCH SIDE SLOPES FROM WIDENING, DEEPENING, AND NEW CONSTRUCTION SHALL BE REDRESSED WITH 4" OF TOPSOIL, UNLESS APPROVED BY THE ENGINEER.
- DITCH BANK SEEDING MUST OCCUR WITHIN 2 DAYS.

TYPICAL OPEN DITCH SEEDING SECTION

NTS



KEY NOTES:

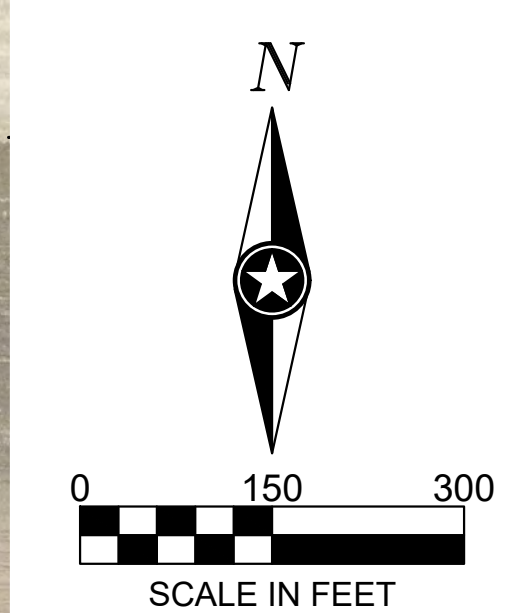
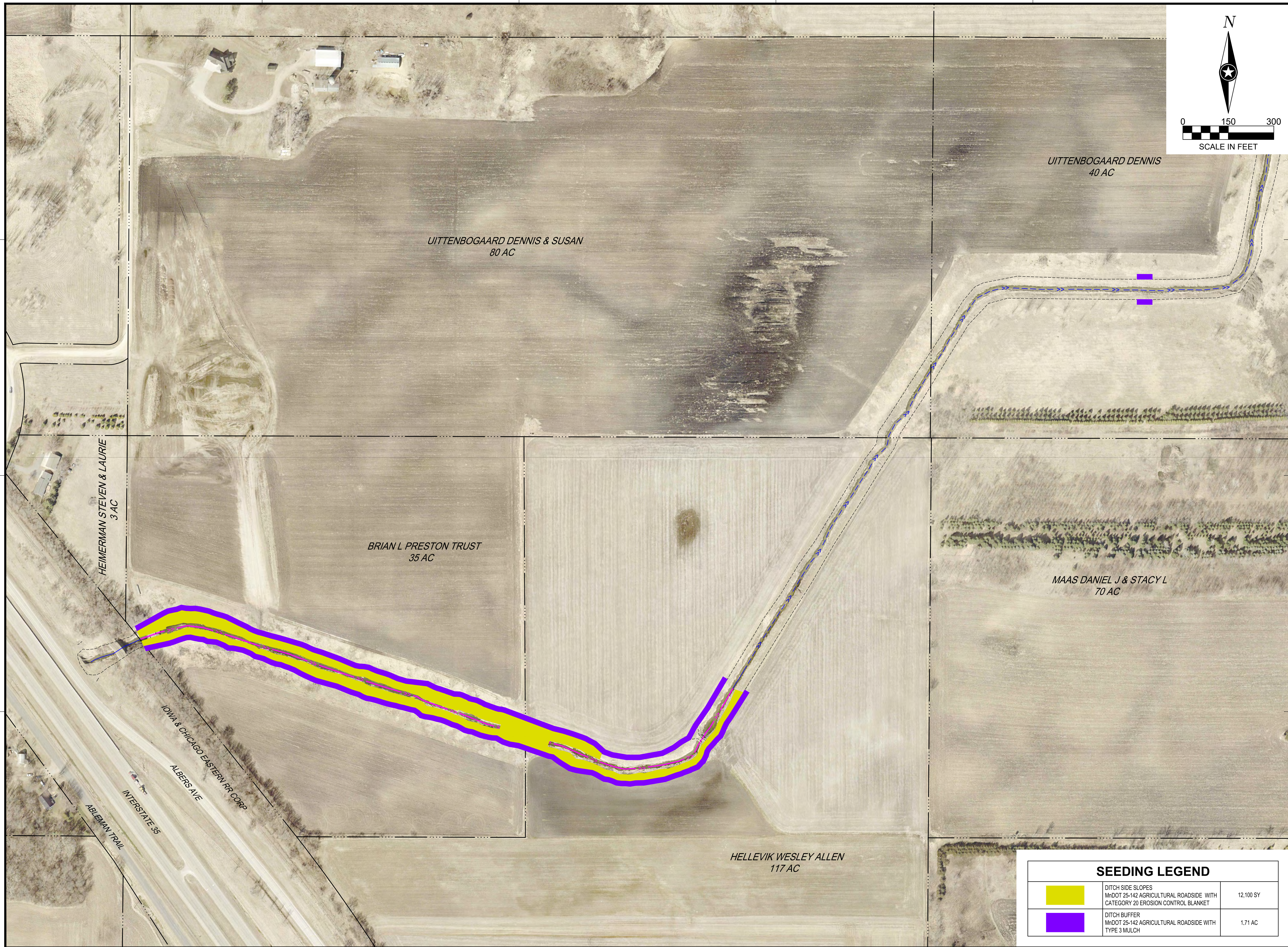
- PROPOSED GROUND AND DITCH SPOIL SECTION VARIES. REFER TO CROSS SECTIONS OR CONTRACT DOCUMENTS FOR FURTHER CLARIFICATION AND INSTRUCTION.
- IF THE EXISTING GROUND SLOPES AWAY FROM THE DITCH AT THE BUFFER, TEMPORARY SEEDING MAY NOT BE NECESSARY. REFER TO THE ENGINEER FOR APPROVAL.
- IF THE EXISTING GROUND SLOPES TOWARDS THE DITCH AT THE BUFFER, TEMPORARY SEEDING SHALL BE REQUIRED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

NOTES:

- TEMPORARY SEEDING SHALL COMPLY WITH THE CONTRACT DOCUMENTS. ALL TEMPORARY SEEDING AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO CONSTRUCTION.
- REFER TO THE CONTRACT DOCUMENTS FOR A FINAL SEEDING AND EROSION CONTROL PLAN.
- DITCH BANK SEEDING MUST OCCUR WITHIN 2 DAYS.

OPEN DITCH SPOILS TEMPORARY SEEDING SECTION

NTS



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BAILEY BOCCHINO
Bailey Bocchino

DATE: 11/14/24 LIC. NO.: 59968

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. AND MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

PROJECT
RICE & STEELE COUNTIES JUDICIAL DITCH No. 6
 RICE & STEELE COUNTIES MINNESOTA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	22-25087
FILE NAME	25087 SWPPP
DRAWN BY	KJH
DESIGNED BY	BPB
REVIEWED BY	BPB
ORIGINAL ISSUE DATE	--/--
CLIENT PROJECT NO.	-

TITLE
SEEDING MAP

SEEDING LEGEND		
	DITCH SIDE SLOPES MnDOT 25-142 AGRICULTURAL ROADSIDE WITH CATEGORY 20 EROSION CONTROL BLANKET	12,100 SY
	DITCH BUFFER MnDOT 25-142 AGRICULTURAL ROADSIDE WITH TYPE 3 MULCH	1.71 AC