
SPECIFICATIONS MANUAL

PAPERMAKER STORMWATER MANAGEMENT POND

For The

VILLAGE OF KIMBERLY OUTAGAMIE COUNTY, WISCONSIN

MARCH 31, 2025

McM. No. K0001-09-25-00156

BDW:car



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SPECIFICATIONS MANUAL

**PAPERMAKER STORMWATER
MANAGEMENT POND**

For The
VILLAGE OF KIMBERLY
OUTAGAMIE COUNTY, WISCONSIN



Prepared By:

McMAHON
ENGINEERS ARCHITECTS

MARCH 31, 2025

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ADVERTISEMENT FOR BIDS

**VILLAGE OF KIMBERLY
Outagamie County, Wisconsin**

OWNER - The Village of Kimberly acting through its Village Board, hereby gives notice that Bids will be received for the following described project.

PROJECT - The work shall consist of construction of the Papermaker Stormwater Management Pond. Items included are grading (approx. 30,000 C.Y.), graveling, clearing and grubbing, miscellaneous storm sewer, asphalt street patching, prairie grass and tree plantings. The project is being funded by a Wisconsin Department of Natural Resources UNPS&N SW construction grant.

Bids will be received on the following Contract:

Contract No. K0001-09-25-00156

PAPERMAKER STORMWATER MANAGEMENT POND

TIME - Bids will be received until 10:00 a.m., local time, on April 16, 2025, via QuestCDN vBid™. Bids will be opened and read aloud in the Village of Kimberly Municipal Complex, 515 W Kimberly Avenue, Kimberly, Wisconsin 54136.

BIDS - All Bids shall be submitted online via QuestCDN vBid™. All Bidders shall Bid in accordance with and upon the Bid Forms included in the Contract Documents.

EXAMINATION OF BIDDING DOCUMENTS - The Project Documents are on file for inspection at the offices of McMahon Associates, Inc., 1445 McMahon Drive, Neenah, Wisconsin 54956.

PROCUREMENT OF BIDDING DOCUMENTS - In order to be a 'Plan Holder' or 'Bidder', each firm or organization shall either download Bidding Documents from the McMahon Associates, Inc. website (www.mcmgrp.com) utilizing QuestCDN eBidDoc™ or by obtaining a hard copy as designated in this Advertisement For Bids.

Complete digital Bidding Documents are available at www.mcmgrp.com or www.questcdn.com. Digital Bidding Documents may be downloaded for a non-refundable **\$40.00** by inputting **Quest Project No. 9604712** on the website's Project Search page. On-line bid submission is available for this project for a non-refundable **\$55.00**. Contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information.

An optional 'paper' set of Bidding Documents is also available for a non-refundable **\$60.00 (approximate cost)** plus applicable sales tax and shipping. Contact **Blue Print Service Company** for more information on paper Bidding Documents and payment options available. Full-size Drawings are available upon request at an additional cost. Neither the Owner nor McMahon Associates, Inc. shall be held responsible for the scale of downloaded Drawings. Printed Drawings obtained from Blue Print Service Company shall be considered to be scalable.

Blue Print Service Company
2350 West Pershing Street; Suite A
Appleton, WI 54914
920-733-4539 - Telephone
920-733-1438 - Fax
bps@blueprintservic.com - Email

Blue Print Service Company
2201 South Oneida Street, Suite 8
Green Bay, WI 54304
920-494-4539 - Telephone
920-494-4551 - Fax
bps@blueprintservic.com - Email

BID SECURITY - No Bid shall be received unless accompanied by a Certified Check or satisfactory Bid Bond payable to the Village of Kimberly in an amount not less than **5%** of the maximum Bid as a guarantee that, if the Bid is accepted, the Bidder will execute and file the Contract, Performance/Payment Bonds and Insurance Certification, as required by the Contract Documents, within **15-days** after the Notice of Award.

BID REJECTION - The OWNER reserves the right to reject any and all Bids, waive any informalities in Bidding or to accept the Bid or Bids which best serves the interests of the Village of Kimberly.

WITHDRAWAL OF BIDS - No Bid shall be withdrawn for a period of **60-days** after the scheduled opening without the consent of the OWNER.

PROOF OF RESPONSIBILITY - A Proof Of Responsibility (Pre-Qualification) Form for all Contracts in excess of \$10,000 must be filed in the office of McMahon Associates, Inc., Attn: Brad Werner, PO Box 1025, Neenah, Wisconsin 54957-1025 not later than **five (5) calendar days** prior to the date of receiving Bids, and shall show sufficient ability, equipment and experience to properly perform the Contract. The Village of Kimberly's decision as to qualifications shall be final.

GOVERNING LAWS & REGULATIONS - The Contract letting shall be subject to the provisions of Sections 66.0901, 66.0903 and 779.16 of the Wisconsin Statutes.

Published by the authority of the Village of Kimberly acting through its Village Board.

VILLAGE OF KIMBERLY | Outagamie County, Wisconsin

Danielle Block, Administrator / DPW

Run: Times Villager
Email: sales@timesvillager.com

Dates: April 2, 2025
April 9, 2025

SECTION 00 21 13.00

INSTRUCTIONS TO BIDDERS

1. Applicability

- 1.1 These Instructions to Bidders shall apply to all Contracts to be awarded for the work covered by these Contract Documents.

2. Contracts

- 2.1 The Contracts to be awarded for work covered by these Contract Documents are described in the Advertisement For Bids and Division 1 - General Requirements.

3. Documents

- 3.1 In order to be a 'Plan Holder' or 'Bidder', each firm or organization shall download Bidding Documents from the McMahon Associates, Inc. website (www.mcmgrp.com) utilizing QuestCDN eBidDoc™.
- 3.2 Complete digital Bidding Documents are available at www.mcmgrp.com or www.questcdn.com. Digital Bidding Documents may be downloaded for a non-refundable **\$40.00** by inputting **Quest Project No. 9604712** on the website's Project Search page. On-line bid submission is available for this project for a non-refundable **\$55.00**. Contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information.
- 3.3 An optional 'paper' set of Bidding Documents is also available for a non-refundable **\$60.00 (approximate cost)** plus applicable sales tax and shipping. Contact **Blue Print Service Company** for more information on paper Bidding Documents and payment options available. Full-size Drawings are available upon request at an additional cost. Neither the OWNER nor McMahon Associates, Inc. shall be held responsible for the scale of downloaded Drawings. Printed Drawings obtained from Blue Print Service Company shall be considered to be scalable.

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Green Bay, WI 54304
920-494-4539 - Telephone
920-494-4551 - Fax
bps@blueprintservic.com - Email

4. Examination Of Contract Documents & Site

- 4.1 Before submitting a Bid, each Bidder must: a) examine the Contract Documents thoroughly, b) visit the site to familiarize themselves with local conditions that may in any manner affect performance of the work, c) familiarize themselves with Federal, State and local laws, ordinances, rules and regulations affecting performance of the work; and d) carefully correlate their observations with the requirements of the Contract Documents.

- 4.2 In order to be a 'Plan Holder' or 'Bidder', each firm or organization shall download Bidding Documents from the McMahon Associates, Inc. website (www.mcmgrp.com) utilizing QuestCDN eBidDoc™.
- 4.3 The submission of a Bid will constitute an incontrovertible representation by the Bidder that they have complied with every requirement of this Article 4.
- 4.4 Reference is made to Section 00 73 00.00 - Supplementary Conditions, and **Section 00 31 32.00 - Geotechnical Data**, for the identification of those surveys and investigative reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work, which have been relied upon by the ENGINEER in preparing the Drawings and Specifications. Before submitting a Bid, each Bidder will, at their own expense, make such additional surveys and investigations, as they deem necessary, to determine their Bid Price for performance of the work within the terms of the Contract Documents.

5. **Pre-Bid Meeting & Project Walk-Through** – Not Applicable

6. **Interpretations**

- 6.1 All questions about the meaning or intent of the Contract Documents shall be submitted to the ENGINEER in writing. Replies will be issued by Addenda. Questions received less than 5-days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7. **Bid Form**

- 7.1 The Bid Form (Section 00 41 00.00) is included in the Contract Documents. The Bid Form shall be completed online. The Bid Price for each item on the form must be in writing and in figures, and in case of conflict, the former shall apply.
- 7.2 Bidders are to bid online. QuestCDN help desk is available for questions at (952) 233-1632.
- A scanned copy of the Bid Bond is acceptable if using on-line bidding for the bid opening. A hard copy (i.e. sealed original) shall be provided upon request.
- 7.3 Where Unit Prices are listed, each of these items must be filled in. All computations on Unit Price Bids will be checked by the ENGINEER, and corrections made where an error is found. The corrected figures shall be used to determine the total of that Bid.
- 7.4 The furnished Bid Form must be used. All Bid Forms pages must be provided in the Bid. The Bidder shall acknowledge the receipt of all Addenda issued in the space provided in the Bid Form.
- 7.5 Each Bid must be accompanied by proper Bid Security and any other information required by the Bid Form and/or these Instructions to Bidders.

- 7.6 Bidders, when signing the Bid Form, shall meet the following requirements:
- 7.6.1 Corporation - Executed in the corporate name and signed by the president, vice president or other authorized agent, with the corporate seal affixed and attested by the secretary. The corporate address and state in which incorporated must be shown below the signature.
 - 7.6.2 Firms or Partnerships - Executed in the partnership name and signed by a partner or authorized agent. Title and the official address of the partnership must be shown below the signature.
 - 7.6.3 Individuals - Executed and signed by the individual Bidder or agent. Bids, which are signed by an attorney- in-fact for individuals, firms, partnerships or joint ventures, shall be accompanied by a power-of-attorney evidencing authority to sign the Bid.
 - 7.6.4 All names must be typed or printed below the signature.

8. Bid & Contract Security

- 8.1 A Certified Check, Bank Cashier's Check or satisfactory Bid Bond in the amount stated in the Advertisement For Bids payable to the OWNER, shall accompany each Bid as a guarantee, that if the Bid is accepted, the Bidder will execute and file the Contract, Performance/Payment Bonds and Certification Of Insurance, as required by the Contract Documents, within **15-days** after the Notice of Award of Contract by the OWNER.
- 8.2 The Bidder to whom a Contract is awarded shall be required to furnish Performance / Payment Bonds as set forth in Article 6 of the General Conditions. The Bonds shall be executed on forms furnished in the Contract Documents by a surety company licensed to do business in the State of Wisconsin and acceptable as surety to the OWNER. Each bond shall be accompanied by a "Power-of-Attorney" authorizing the attorney-in-fact to bind the Surety Company and certified to include the date of the Bond.
- 8.3 If the Bidder fails to execute the Contract, furnish the Performance/Payment Bonds and the Certification Of Insurance, as required by the Contract Documents, the amount of the Check or Bid Bond submitted with the Bid shall be forfeited as Liquidated Damages.

9. Return Of Bid Security

- 9.1 The Bid Security of any Bidder, whom the OWNER believes to have a reasonable opportunity of receiving the award, may be retained by the OWNER until the successful Bidder files the executed Contract, Contract Security and Certification Of Insurance with the OWNER in accordance with the Contract Documents.

10. Time of Completion

- 10.1 The Contract shall be considered completed when all work called for by the Contract Documents has been completed and accepted by the OWNER.

11. Submission of Bids

11.1 On-Line Bids

11.2.1 CONTRACTOR's shall submit an On-Line Bid.

11.2.2 The On-Line Bid shall be prepared and uploaded prior to the date and time established in the Advertisement For Bids utilizing the vBID™ system provided by QuestCDN for this project.

11.2.3 The On-Line Bid shall include the numeric bid for the proposed cost utilizing the electronic Bid Form provided, Bid Security and any other documentation required.

12. Unit Prices

12.1 Unit Prices are required in the Bid Form. The Bidder shall Bid on all units listed. The OWNER reserves the right to use these Unit Prices should extra work be necessary, or to proceed with extra work as stated in the General Conditions.

13. Combination of Bids – Not Applicable

14. Withdrawal of Bids

14.1 Bids may be withdrawn at any time prior to the time of Bid Opening. Any Bid withdrawn prior to the Bid Opening may not be resubmitted. No Bid may be withdrawn after the Bid Opening for the period of time indicated in the Advertisement For Bids, except as permitted under Section 66.29(5) Wisconsin State Statutes.

15. Minimum Wage – Not Applicable

16. Subcontractors

16.1 Bidders are required to list their proposed Subcontractors in the space provided in the Bid Form in accordance with the latest requirements of Section 66.29(7), Wisconsin Statutes.

16.2 The OWNER reserves the right to reject the use of any proposed Subcontractor without increasing the Bid Prices.

16.3 The Bidder shall not be required to employ any Subcontractor against whom they have reasonable objections.

17. Major Equipment Items – Not Applicable

18. Equipment Data – Not Applicable

19. Substitutions

19.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

- 19.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the ENGINEER at least 10-days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted, and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the work, including changes in the work of other Contracts that incorporation of the proposed substitution would require shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The ENGINEER's decision of approval or disapproval of the proposed substitution shall be final.
- 19.3 No substitutions will be considered after the Contract Award, unless specifically provided in the Contract Documents.

20. Qualifications Of Bidder

- 20.1 The OWNER may make such investigations as deemed necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the OWNER all such information and data as may be requested for this purpose. The OWNER reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the OWNER that such Bidder is properly qualified to carry out the obligations of the Contract and complete the work as described by the Contract Documents. Conditional Bids shall not be accepted.
- 20.2 Before a Contract is awarded, the Bidder to whom an award is contemplated may be required to submit the following information:
- 20.2.1 The address of and description of the Bidder's plant or permanent place of business.
- 20.2.2 An itemized list of the Bidder's plant and equipment.
- 20.2.3 A Financial Statement of the Bidder indicating financial resources to meet any obligations arising from the work.
- 20.2.4 A list of projects similar in nature, which have been satisfactorily constructed by the Bidder.
- 20.2.5 A listing of technical experience of personnel guaranteed to be employed in responsible charge of the work.
- 20.2.6 Such additional information as will satisfy the OWNER that the Bidder is adequately prepared to fulfill the Contract.
- 20.3 Similar information may be required from any proposed Subcontractor or Equipment Manufacturer, should the OWNER feel that such information is necessary to determine which Bid will be in the best interest of the OWNER.

21. Right To Accept Or Reject Bids

- 21.1 The OWNER reserves the right to reject any or all Bids, to waive any irregularities or informalities in the Bids, to disregard all non-conforming or conditional Bids and to accept

any Bid, which will best serve the interests of the OWNER, all subject to the requirements of applicable Federal procurement regulations.

- 21.2 A Bid which has not been prepared in accordance with these instructions or which does not contain an adequate and reasonable Bid, or Unit Price for each item in the Bid Form, may be considered irregular and subject to rejection.
- 21.3 Errors in extension of Unit Prices will be corrected, providing the Unit Price is legible and found to be in compliance with the Specifications. The total Bid will be adjusted in accordance with the corrected extensions.

22. Award Of Contract

- 22.1 The Bid opening shall be as stated in the Advertisement For Bids. No awards shall be made until the Bids opened can be compared, tabulated and reviewed by the OWNER. Contract award shall be by OWNER action, and the Bidder to whom the award will be made will be notified by the OWNER at the earliest possible date.
- 22.2 Contract(s) shall be awarded to the lowest responsive, responsible Bidder. On Unit Price Contracts, the low Bidder will be determined by the total of the Unit Prices extended by the estimated number of units indicated in the Bid Form. On Lump Sum Contracts, the low Bid shall be the low Base Bid and any combination of accepted Alternate Bids.
- 22.3 The OWNER shall compare Bids on the following basis:
 - 22.3.1 The lowest total of Base Bid items for each individual Contract.
 - 22.3.2 The total of individual Bids for each Contract versus any combination of combined Bids and individual Bids depending upon Bids received.
- 22.4 The OWNER reserves the right to give responsible weight to:
 - 22.4.1 Cost of operation, maintenance and repairs, and rate of depreciation.
 - 22.4.2 The probability of the Contract being carried to a successful completion within the time specified, with the means, methods and equipment the Bidder proposes to use.
 - 22.4.3 The extent of the Bidder's experience with work of the nature involved.
- 22.5 The OWNER reserves the right to award the Contract(s) to the lowest individual Bidder or any combination of Bidders, whichever may be to the OWNER'S best interest.

23. Governing Laws

- 23.1 The Bidder shall herewith take notice that all State of Wisconsin Statutes, Municipal Ordinances and regulations, and the rules and regulations of all authorities having jurisdiction over the construction of this project shall apply to all Contracts throughout, and they shall be deemed to be included in all Contracts as though written out in full and if referred to, shall be interpreted to mean the most recent on record regardless of the designation used in the Contract Documents.

- 23.2 All work under these Contract Documents shall be in accordance with the requirements of the Rules of the Wisconsin Department of Safety & Professional Services (DSPS).
- 23.3 The Bidder shall investigate the statutory requirements for payment of **Sales Taxes**, in particular, Sec. 77.54(9m), Wisconsin Statutes, and shall include the cost of tax payments in the Bid prices in the Bid Form, when applicable.

END OF SECTION

SECTION 00 31 32.00

GEOTECHNICAL DATA

1. Physical Conditions - Investigations & Reports

1.1 In the preparation of the Drawings and Specifications, the ENGINEER has relied upon the following report(s) and test(s) of subsurface and latent physical conditions at the site:

1.1.1 Geotechnical Engineering Report
Proposed Papermaker Pond and Salt Storage Shed
Parcel No. 250168301 and Parcel No. 250094200
Sunset Park Road, Sunset Drive and West Maes Avenue
Village of Kimberly, Outagamie County, Wisconsin
ECS Project No. 59:4384
March 18, 2025

1.2 Copies of this/these report(s) are bound in Section 00 31 32.00 - Geotechnical Data, as 'Technical Data'; as defined in Paragraph 1.01 and 5.03 of the General Conditions. CONTRACTORS shall review this/these document(s) in its/their entirety prior to submitting a Bid for this project.

2. Subsurface Investigation

2.1 The Soil Boring Logs, included in the report(s) referenced in Paragraph 1, which are included in Section 00 31 32.00 - Geotechnical Data, are Technical Data provided for the CONTRACTOR use.

END OF SECTION



ECS Midwest, LLC

Geotechnical Engineering Report

Proposed Papermaker Pond and Salt Storage Shed

Parcel No.250168301 and Parcel No.250094200
Sunset Park Road, Sunset Drive and West Maes Avenue
Village of Kimberly, Outagamie County, Wisconsin

ECS Project No. 59:4384

March 18, 2025





ECS MIDWEST, LLC

Geotechnical • Construction Materials • Environmental • Facilities

March 18, 2025

Dani Block
Village of Kimberly
Administrator/ Director of Public Works
515 W Kimberly Ave
Kimberly, WI 54136
Email: dblock@vokimberlywi.gov

Cc: Phil Kleman
McMahon, Inc.
Email: pkleman@mcmgrp.com

ECS Project No. 59:4384

Reference: Geotechnical Engineering Report
Proposed Papermaker Pond and Salt Storage Shed
Parcel No.250168301 and Parcel No.250094200
Sunset Park Road, Sunset Drive and West Maes Avenue
Village of Kimberly, Outagamie County, Wisconsin

Dear Ms. Block:

ECS Midwest LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed scope of service. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to the Village of Kimberly and McMahon, Inc., during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Midwest, LLC

Yadi Pineda
Geotechnical Project Manager
ypineda@ecslimited.com



Matthew Meyer, P.E.
Principal Engineer
mmeyer@ecslimited.com

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ECS Florida, LLC • ECS Mid-Atlantic, LLC • ECS Midwest, LLC • ECS Pacific, Inc. • ECS Southeast, LLC • ECS Southwest, LLP
ECS New York Engineering, PLLC - An Associate of ECS Group of Companies • www.ecslimited.com

"ONE FIRM. ONE MISSION."

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- Soil Evaluation – Storm Logs

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EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, we summarized our principal foundation recommendations. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- A significant over-excavation of inadequate soils and replacement with engineered fill would be required prior to the placement of a shallow spread footing foundation system at the proposed salt storage shed site. Specifically, Boring B-03 encountered existing fill which extended to a depth of 10 feet below the existing grade.
- The proposed new Salt Storage Shed can be supported by a spread footing foundation system bearing on engineered fill overlying competent native soils and may be designed for a maximum net allowable bearing pressure of 4,000 psf (pounds per square foot), having Standard Penetration Test (SPT) N-values of at least 11 bpf (blows per foot) or an unconfined compressive strength (Q_p) of at least 2.25 tsf (tons per square foot).
- For the Papermaker Pond construction, ECS recommends construction of a clay liner to reduce lateral and/or vertical movement of water through the basin walls and bottom. Further, we recommend the removal of encountered undocumented fill, soils containing more than 5 percent organic content (topsoil), and soft/very loose or disturbed soils from within 2 feet below the clay liner. Over-excavated soils should be replaced with additional clay liner material. The *Wet Detention Pond Design Considerations* Section of this report contains our recommendations concerning wet detention pond and clay liner construction for this site.
- Based on the soil textural classifications and the guidelines provided in Table 2 of the WDNR Conservation Practice Standard 1002, the infiltration rate of the soils encountered in the borings is approximately 0.03 to 3.60 inches per hour. Based on the conditions encountered in the test borings, the site is considered to have a low to moderate capacity for the infiltration of storm water. The *Infiltration Design Considerations* Section of this report contains our recommendations concerning storm water infiltration for this site.

1.0 INTRODUCTION

ECS prepared this report for the purpose of providing the results of our subsurface exploration and laboratory testing, site characterization, engineering analysis, and geotechnical recommendations for the design and construction of a new stormwater detention pond and a salt storage shed. The recommendations developed for this report are based on project information supplied by Ms. Dani Block with The Village of Kimberly and Mr. Phil Kleman with McMahan, Inc.

ECS provided services in accordance with our Proposal No. 59:6641-G, dated January 22, 2025, as authorized by Ms. Dani Block with The Village of Kimberly on February 26, 2025, which includes our agreed to Terms and Conditions of Service.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items:

- A brief review and description of our field and laboratory test procedures and results.
- A review of the observed surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil/rock stratigraphy with pertinent available physical properties.
- Final test boring logs.
- Recommended foundation type, allowable soil bearing pressure, and estimates of foundation settlement.
- General considerations for slab-on-grade design including subgrade improvements and under-slab drainage.
- An evaluation of the on-site soils for storm water infiltration in accordance with Wisconsin DNR Technical Standard 1002.
- Parameters to be used for design and construction of wet detention ponds, including pond liner construction in accordance with Wisconsin DNR Technical Standard 1001.
- Evaluation and recommendations relative to groundwater control.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills to support grade slabs and pavements, minimum compaction levels, and engineered fill material guidelines.
- Recommendations for additional testing and/or consultation that might be required to complete the geotechnical assessment and related geotechnical engineering for this project.

Our scope of services for this report did not include sampling, testing, or consultation for environmental purposes.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project sites are on parcel 250168301 located on the southwest corner of Sunset Park Road and Sunset Drive, and on Parcel 250094200 located at West Maes Avenue in The Village of Kimberly, Outagamie County, Wisconsin. The site locations are shown in the Figure below and on the *Site Location Diagram* in Appendix A:



Site Locations (approximately outlined in red)

The sites vicinity consists of a residential and commercial area. The site of the proposed stormwater detention pond consisted of a vacant grassy lot, while the site for the proposed new storage shed consisted of an existing facility, including buildings, parking lot and driveway areas.

ECS interpreted site specific topography from the Outagamie County interactive map (<https://ocgis.maps.arcgis.com/>) to estimate the existing site grade elevations. According to the interactive map, we anticipate the existing site grade elevations range from approximately EL. +730 feet above mean sea level (MSL) to EL. +735 feet MSL at the boring locations.

Our visual review of historical aerial photographs dated between 1992 and 2024 obtained from Google Earth indicated that the area of the proposed stormwater detention pond appears to have consisted of a swimming facility prior to 2005, which was filled and graded between 1992 and 2005. This site appears relatively unchanged since at least 2005. Additionally, the area of the new storage shed appears to have remained relatively unchanged since at least 1992.

2.2 PROPOSED CONSTRUCTION

ECS understands the proposed construction consists of a new stormwater pond and a new salt storage shed. We understand the bottom of the detention basin will be at Elevation 713.0 feet; the 100-year water surface elevation will be at EL. 724.5 feet, the 2-year water surface elevation will be at EL. 722.6 feet, the permanent pool of water elevation will be at EL. 719.0 feet, and the approximate ground elevation at the proposed soil boring locations ranges between EL. 733.9 feet to EL. 734.7 feet. Details of the anticipated foundation loadings for the salt storage shed were not provided to ECS at the time of this report was written. However, we anticipated structural loads will not exceed 75 kips for isolated columns and 5 kips/ft for continuous walls. Further, we anticipate the floor elevation of the new structure will closely match the first-floor elevation of the existing building.

Where the borings encounter subsurface conditions that might be detrimental to the proposed construction, ECS anticipates the owner will have an acceptable risk level if the detrimental material remains in place. As a result, we anticipate the owner would only be willing to accept a low risk for pond embankment settlement exceeding 2 inches. In addition, we anticipate the owner would only be willing to accept a low risk for foundation and floor slab settlement exceeding 1 inch and ½ inch, respectively.

If ECS' understanding of the project or the owner's anticipated acceptable risk level is not correct or the design changes, please contact ECS so that we may review these changes and revise our recommendations as appropriate.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms, and to evaluate field and laboratory data to assist in the development of geotechnical design and construction recommendations.

3.1.1 Test Borings

Our exploration procedures are explained in greater detail in Appendix B including the insert titled "Subsurface Exploration Procedures."

Our scope of work included drilling three (3) Standard Penetration Test (SPT) soil borings, with one (1) extended to a depth of approximately 20 feet below the existing grade within the area of the proposed storage shed structure and two (2) to 27 feet within the area of the proposed stormwater pond. ECS personnel located the borings at the site using conventional measuring techniques referenced to existing site features and the approximate boring locations are shown on the Boring Location Diagram in Appendix A.

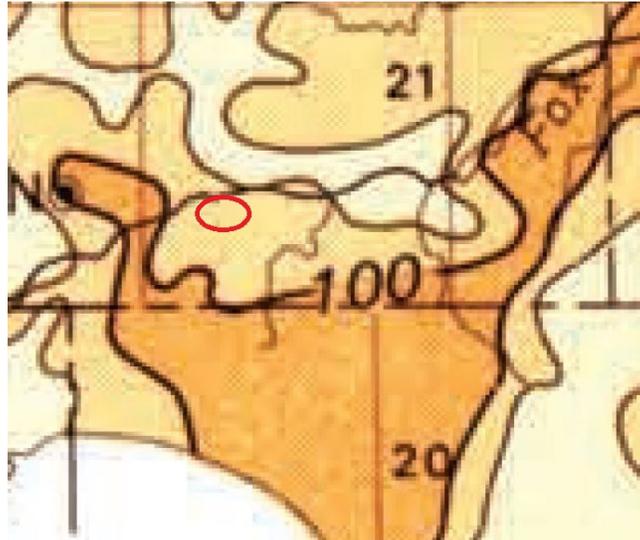
According to the preliminary site plan provided to us by McMahon Associates, Inc., Boring B-01 has an elevation of approximately 733.9 feet, while Boring B-02 stands at about 734.7 feet. Furthermore, ECS estimated the surface elevation of Boring B-03 to the nearest foot using the

Outagamie County Land Information Office's interactive map interval contours. Based on this interactive map, Boring B-03 has an elevation of roughly 734.0 feet, mean sea level (MSL). We anticipate these elevations to be referenced to the North American Vertical Datum of 1988 (NAVD-88). The approximate surface elevation at each boring location can be found on the boring logs included in Appendix B of this report.

3.2 REGIONAL/SITE GEOLOGY

According to the University of Wisconsin Extension Geological and Natural History Survey and U.S. Geological Survey^{1,2} the site of the proposed construction lies above Phanerozoic bedrock of the Ordovician System consisting of sedimentary rocks of Paleozoic Age. The bedrock formation generally lies within the Sinnipee Group (Os) which consists of dolomite with some limestone and shale, and includes Galena, Decorah, and Platteville Formations.

The soil overburden in the project area is generally 50 to 100 feet thick. The depth to bedrock profile is illustrated in the Figure below:



(Source: *Depth to Bedrock in Wisconsin*, University of Wisconsin Extension Geological and Natural History Survey)
Site Location (approximately outlined in red)

3.3 SOIL SURVEY MAPPING

According to the Soil Survey from the USDA - Natural Resources Conservation Service (websoilsurvey.nrcs.usda.gov), which provides soil information to a shallow depth (generally less than 5 feet), the near surface soils are mapped as Bellevue silt loam (Bc), Udorthents (Uo) and Winneconne silty clay loam (WnB). A soil map of the project site is presented in Appendix A. These soil types are described with the following properties:

¹ Trotta, L.C. and Cotter, R.D. *Depth to Bedrock in Wisconsin*. University of Wisconsin Extension Geological and Natural History Survey, U.S. Geological Survey, USGS, 1973.

² Mudrey, M.G., Brown B.A., and Greenburg, J.K. *Bedrock Geologic Map of Wisconsin*. University of Wisconsin Extension Geological and Natural History Survey, 1982.

SOIL MAP UNIT CHARACTERISTICS			
Description	Bellevue silt loam, 0 to 2 percent slopes	Udorthents	Winneconne silty clay loam, 2 to 6 percent slopes
Symbol	Bc	Uo	WnB
Landforms	Flood plains	--	Lake plains
Typical Soil Profile	Stratified sandy loamy alluvium	Variable	Calcareous clayey lacustrine deposits
Drainage	Moderately well drained	Somewhat excessively drained	Well drained
Hydrologic Group	C	A	D
Hydric Soil	No	No	No
Infiltration Rate	Moderately high 0.20 to 0.60 in/hr.	Very low to high 0.00 to 2.0 in/hr.	Very low 0.00 in/hr.
Frequency of Flooding	Frequent	None	None
Frequency of Ponding	None	None	None
Potential for Frost Action	Moderate	Moderate	Moderate
Boring Location	At none of the boring location	B-03	B-01 through B-03

3.4 SUBSURFACE CHARACTERIZATION

The encountered subsurface conditions in the borings generally appeared to match published Soil Survey mapping, except for the existing fill. For subsurface information at a specific test boring location, refer to the boring logs in Appendix B. The following Table provides generalized characterizations of the soil strata:

GENERALIZED SUBSURFACE CHARACTERIZATION				
Approximate Depth Increment of Stratum (feet)	Stratum No.	Material Description	Range of SPT ⁽¹⁾ N-values (bpf)	Range of Unconfined Compressive Strength, Qp ⁽²⁾ (tsf)
0 – 0.8	N/A	Approximately 1 inch of Topsoil in B-01 and B-02. Approximately 4 inches of Asphalt over 5 inches of Gravel in Boring B-03.	N/A	N/A
0 – 10	I	FILL: Soft to very stiff SANDY LEAN CLAY (CL) and DEBRIS FILL, which consisted of Mixed recycled asphalt, sand, gravel and other deleterious materials.	2 – 54	0.25 – 2.0
7.5 – 27 (End of boring)	II	Lacustrine: Firm to very stiff LEAN CLAY (CL).	5 – 22	0.5 – 3.5

Notes:

(1) Standard Penetration Testing.

(2) Estimated from calibrated hand penetrometer.

The soil stratification shown on the boring logs represents the interpreted soil conditions at the actual boring locations. Variations in the stratification can occur between sample intervals and

boring locations. The subsurface conditions at other times and locations on the site may differ from those found at boring locations. If different site conditions are encountered during construction, then ECS should be contacted to review our recommendations relative to the new information.

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

3.5 GROUNDWATER OBSERVATIONS

The drill crew observed the boreholes for a measurable groundwater level during and at the completion of drilling operations. However, the drillers did not observe Boring B-01 for groundwater at the completion of drilling because the use of drilling mud during advancement of the boring often obscures water levels. ECS also returned to the site on March 18, 2025 to obtain a 7-day water level measurement in Boring B-01 and B-02. The measured groundwater levels are noted in the following Table and on the boring logs in Appendix B.

GROUNDWATER OBSERVATIONS DURING/AFTER DRILLING ACTIVITIES			
Boring No.	Depth to Groundwater Below Existing Grade (feet)		
	During Sampling	After Drilling	7-Day Water Reading (B-01 and B-02)
B-01	4.6	N/A	4.3
B-02	None	None	9.2
B-03	None	16.2	N/A

Based on the encountered subsurface conditions, the saturated (water table) aquifer is likely located below the terminal depth of the borings. Further, borings with a measurable groundwater level likely encountered groundwater perched within a more permeable soil zone. The site may contain areas of perched groundwater or a shallow water table aquifer in other unexplored areas of the site. Perched groundwater is distinguished differently from the water table aquifer as defined below:

“Perched water is typically of limited quantity, replenished or recharged very slowly. When encountered in an excavation, perched water will typically drain off very quickly, with limited continuous flow or bleeding, unless a source of recharge, such as a leaking utility is present.”

From: *Construction Dewatering and Groundwater Control – New Methods and Applications, 3rd Edition*

A water table aquifer is distinguished from a perched groundwater table based on the recharge ability of the water table aquifer, which may be limitless but can be lowered temporarily through adequate dewatering techniques such as deep wells and well points. Perched groundwater is often alleviated in excavations by pumping from sump pits and French drains.

In addition, variations in both groundwater types (perched and groundwater table aquifer) can occur because of seasonal variations in precipitation, evaporation, surface water runoff, lateral

drainage conditions, construction activities, and other factors. The time of year and the weather history during the advancement of the borings should be considered when estimating groundwater levels at other points in time.

3.6 LABORATORY SERVICES

ECS performed classification and index property tests on representative soil samples obtained from the test borings to aid classification of the soils, and to estimate engineering properties. The soil samples will be retained in our laboratory for a period of 60 days, after which they will be discarded unless other instructions are received as to their disposal.

After completion of the field exploration, a geotechnical engineer visually classified each collected soil sample from the test borings based on texture and plasticity using ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)* and ASTM D2487 *Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS))* as a guide. After classification, the geotechnical engineer grouped the various soil types into the major zones noted on the test boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions on the test boring logs. The stratification lines designating the interfaces between earth materials on the logs are approximate; in-situ, the transitions may be gradual.

ECS also classified the soils retained from the borings using the U.S. Department of Agriculture (USDA) Soil Classification System as a general guideline. The USDA classifications and soil infiltration rates for each soil strata encountered in the borings can be found on the "Soil and Site Evaluation – Storm" form included in Appendix B of this report.

The laboratory testing program included tests using relevant ASTM procedures to determine moisture content, percent material passing the No. 200 sieve (P200), and Atterberg limits on select soil samples recovered from the borings. The test results can be found on the boring logs in Appendix B, and in Appendix C of this report.

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

4.0 DESIGN RECOMMENDATIONS

4.1 FOUNDATION DESIGN- SALT STORAGE SHED

Provided subgrades and engineered fills are prepared as recommended in this report. The proposed new building can be supported by conventional spread footing foundations, including isolated column pads and continuous (wall) footings, from a competent bearing native soil subgrade. The following parameters are recommended for shallow spread footing foundation design:

SPREAD FOOTING FOUNDATIONS	
Design Parameter	Recommended Design Value
Net Allowable Bearing Pressure ^(1, 5)	4,000 psf (pounds per square foot)
Adequate Bearing Soil Material	Engineered fill overlying Stratum II
Competent Soils Designated Adequate for the Allowable Bearing Pressure	$N \geq 11$ bpf (sand) or $Q_p \geq 2.25$ tsf (clay)
Minimum Width	24 inches (Column Pad) 18 inches (Continuous Footing)
Minimum Exterior Frost Depth (below final exterior grade) ⁽²⁾	42 inches (Heated Structure) 66 inches (Non-Heated Structure)
Estimated Total Settlement ⁽³⁾	Less than 1 inch
Estimated Differential Settlement ⁽⁴⁾	Cannot be determined

Notes:

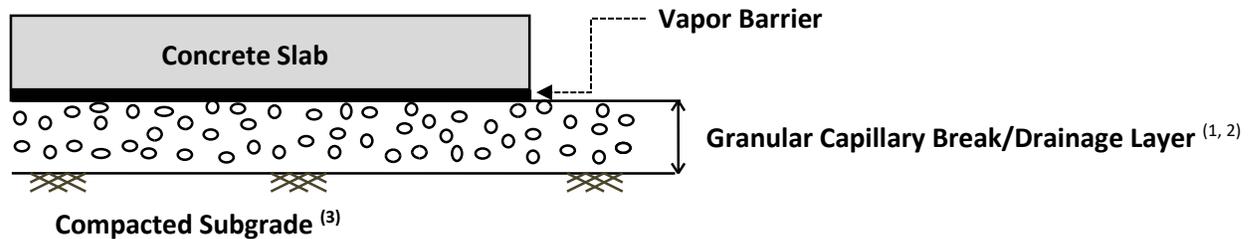
- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation and includes a minimum factor of safety of 3.
- (2) For frost penetration considerations.
- (3) Based on estimated maximum column/wall loads. If the final design loads are different, then ECS should be contacted to update foundation recommendations and settlement estimates.
- (4) We cannot estimate the potential for differential settlement because our scope only included conducting one boring at this location.

Potential Undercuts: Based on our review of the subsurface information, the contractor should be prepared to over-excavate areas of existing undocumented fill, organic soils (topsoil), native soils that do not meet strength requirements, or other deleterious soils encountered in the foundation excavations. The *Earthwork Operations* Section in this report provides our subgrade preparation recommendations for the construction of spread footing foundations and floor slabs. ECS anticipates over-excavation to remove existing undocumented fill from below proposed shallow foundations and floor slabs will be required within the area of Boring B-03. Over-excavated material should be backfilled with engineered fill up to the original design bottom of footing elevation.

As an alternative to soil replacement, strip footing pads could be stepped or thickened, and isolated column pads could be uniformly thickened to extend through inadequate bearing materials. If this alternative is utilized, then ECS recommends stepped or thickened footings be designed by the structural engineer.

4.2 SLABS ON GRADE

Provided subgrades and engineered fills are prepared as discussed herein, the proposed slabs-on-grade can be constructed as Ground Supported Slabs (or Slab-On-Grade). Based on the anticipated finished slab elevation, it appears that slabs-on-grade will bear on newly compacted fill. The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Thickness: Minimum 6 inches.
2. Drainage Layer Material: GRAVEL (GP, GW) or SAND (SP, SW) having a maximum aggregate size of 1 inch and no more than 5 percent passing the No. 200 sieve.
3. Compacted Subgrade Thickness: Minimum 12 inches.

Soft/very loose or yielding soils may be encountered in portions of the building. Those soils should be removed and replaced with compacted engineered fill in accordance with the recommendations included in this report.

Subgrade Modulus: Provided the engineered fill and granular drainage layer are constructed in accordance with our recommendations, the slab may be designed using an estimated modulus of subgrade reaction, k_1 of 125 pci (pounds per cubic inch). The modulus of subgrade reaction value is based on historical testing of similar soils using a 1 ft by 1 ft plate load test basis. However, where at least 2 feet of engineered fill will be placed below the entire floor area, then the utilized modulus of subgrade reaction, k_1 value can be increased to 175 pci.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed slab covering material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with adequate reinforcement and load transfer devices to preclude overstressing of the slab.

Frost Susceptible Areas: Exterior aprons and sidewalks, and portions of the slab, such as at doorways, and entrance/exit vestibules may be susceptible to frost heave movement during freezing weather. Additional insulation, installation of subgrade drainage, and/or replacement to the frost depth with non-frost-susceptible backfill should be considered for these areas. Pavement and ground surface grades are recommended to be sloped away from the building and flatwork, to reduce water infiltration and potential frost heave problems.

4.3 WET DETENTION POND DESIGN CONSIDERATIONS

The recommendations presented in this section are limited to a wet detention pond which follows the general guidelines of Wisconsin Department of Natural Resources (WDNR) Conservation Practice Standard 1001, Wet Detention Ponds.

General Considerations: ECS understands consideration is being given to the construction of a wet detention pond within the vicinity of Boring B-01 and B-02. Based on the boring information, the construction and use of a wet detention basin should be feasible at this site provided encountered undocumented fill and organic soils (topsoil) are clay lined. Further, we recommend the removal of encountered undocumented fill, soils containing more than 5 percent organic content, and soft/very loose or disturbed soils from within 2 feet below the clay liner. The over-excavated soils should be replaced with additional clay liner material.

ECS recommends construction of a clay liner to reduce lateral and/or vertical movement of water through the basin walls and bottom, particularly if it is desired to have a stable permanent pool elevation. We recommend scarification and recompaction within 2 feet of the basin sidewalls and bottom to help disrupt fissures or more permeable soil seams or lenses. A minimum 2-foot-thick, compacted clay liner is recommended at the basin sides and bottom. Scarification and recompaction of basin walls and bottom, and construction of the clay liner are recommended to be observed and tested by ECS.

Based on the soil boring information the soils at this location are expected to consist of LEAN CLAY and SANDY LEAN CLAY (CL). ECS recommends construction of a clay liner in areas containing strata or seams of silt, sand, and gravels to reduce lateral and/or vertical movement of water through the basin walls and bottom, particularly if it is desired to have a stable permanent pool elevation. Testing of compacted samples of the soil to be used as liner material is recommended to check its compliance with specifications for use as a wet detention basin liner. We recommend scarification and recompaction within 2 feet of the basin sidewalls and bottom, to help disrupt fissures or more permeable soil seams or lenses, for basin liner construction. A minimum 2-foot-thick, compacted clay liner is recommended at the basin sides and bottom. Scarification and recompaction of basin walls and bottom, and construction of the clay liner are recommended to be observed and tested by ECS.

Soil used as detention basin liner material is recommended to consist of soil which conforms to WDNR Conservation Practice Standard 1001, Type A Liner requirements, which include the following parameters:

- A minimum of 50 percent, by dry weight, of soil passing the No. 200 sieve.
- An in-place saturated hydraulic conductivity of 1×10^{-7} cm/sec or less.
- An average liquid limit of 25 or greater, with no value less than 20.
- An average plasticity index of 12 or greater with no values less than 10.
- Compacted at a moisture content 2 percent above the optimum moisture content determined by Modified Proctor (ASTM D1557) to a minimum of 90 percent of modified proctor maximum dry density.
- Compacted with a footed compactor weighing at least 25,000 pounds, operated continuously, in loose lift thicknesses not to exceed the smaller of 6 inches or the length of the teeth on the footed compactor used.

-
- Minimum liner thickness of 2 feet.
 - Less than 3 percent loss on ignition organic content per ASTM D2487.
 - The material must not contain deleterious materials. Materials considered deleterious include miscellaneous construction material rubble fragments, wood fragments, material greater than 3 inches in nominal diameter, and hazardous materials.

Based on the boring information, the LEAN CLAY (CL) soils encountered in Boring B-01 and B-02 will likely meet the Type A liner requirements but should be further evaluated and tested by ECS prior to its use. A higher density than the minimum required by Natural Resources Conservation Practice Standard 1001 may be required depending on permeability requirements and should be determined based on laboratory testing of compacted samples of the proposed liner material. USDA-NRCS Wisconsin Construction Specification 300 Clay Liner gives additional information pertaining to selection and compaction of engineered fill for the clay liner. The suitability of clay liner materials should be checked by ECS prior to placement.

In addition to the USDA-NRCS Wisconsin Construction Specification 300 Clay Liner requirement that the water content of fill material be above the optimum moisture content, ECS recommends the water content of fill material be no more than 4 percent above the optimum moisture content. The clay should be mechanically processed, such as with discing, prior to compaction to break up clods of clay to no more than half the loose lift thickness in size. The clay liner, once placed, should be protected from desiccation caused by drying of the soil. The formation of desiccation cracks will increase the risk of water loss through the clay liner.

Dewatering efforts may be necessary during construction of the detention basin. Seasonal variations in precipitation and site drainage conditions can cause the accumulation of water in the upper soils. Water that accumulates in construction areas should be removed from the excavations, along with unstable soil, as soon as possible. We recommend required sump pits and/or well-points be installed outside the perimeter of the basin liner to reduce the potential for the formation of a detrimental preferential flow path through the liner. Dewatering should be started prior to excavation to prevent "boiling" and/or "heaving" of the subgrade soils. Dewatering should continue until earthwork operations and backfilling have extended above the water table.

Where inlet and outlet pipes are constructed, measures should be taken to reduce seepage along conduits. Typically, acceptable measures include the use of granular filters, anti-seepage collars or bentonite.

4.4 INFILTRATION DESIGN CONSIDERATIONS

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

Design Infiltration Rates: Based on the soil textural classification and guidelines provided in Table 2 of the *WDNR Conservation Practice Standard 1002*, the infiltration rate of the soils encountered in Boring B-01 and B-02 range from about 0.03 to 3.60 inches per hour. The soil infiltration rate for each soil strata encountered in the borings can be found on the *Soil and Site Evaluation – Storm* form included in Appendix B of this report. Infiltration rates based on soil textural classification and the guidelines provided in Table 2 of the *WDNR Conservation Practice Standard 1002* should be adjusted for the least permeable soil layer within 5-feet of each of the listed intervals.

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

Infiltration Feasibility: Based on the conditions encountered in the test borings, the site is generally considered to have a low to moderate capacity for the infiltration of storm water because of the predominately clayey soils present at this site. The locations of the borings are expected to be exempt from infiltration where the bottom of the infiltration device extends within 5 feet of clayey soils. The WDNR Technical Standard 1002 and the Wisconsin Administrative Code indicate clayey soil can be considered to have an infiltration rate of less than 0.6 inches per hour. If the construction of a storm water infiltration basin will be considered for the site, then test pits would be necessary to evaluate the lateral extent of infiltrative soils and to establish design infiltration rates.

The recommendations in this section are based on the soil and groundwater conditions observed in the test borings. Our scope of services is not inclusive of each step involved in the initial site screening (Part A) of the WDNR Technical Standard 1002. Therefore, other conditions may exist at, or near the site that could exclude or exempt the site, or portions of the site from the infiltration requirements. Additional evaluation should be conducted prior to the design and implementation of an infiltration device at this site so that its construction meets Wisconsin Administrative Code requirements.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Initial Site Preparation

The subgrade preparation should include scheduled removal of existing pavements, foundations and floor slabs, and removal of vegetation, root-mat, organic soils (topsoil), undocumented fill, and other soft/very loose or disturbed materials from the 10-foot expanded building limits, 5-foot expanded pavement limits, and 5 feet beyond the toe of engineered fills, where feasible. ECS should be retained to observe and document that topsoil and other deleterious surficial materials have been removed prior to the placement of engineered fill or construction of structures. Utilities not reused should be capped-off and removed or properly abandoned in-place in accordance with local codes and ordinances.

5.1.2 Proof-rolling

After the removal of inadequate surface materials, cutting to the proposed subgrade, and prior to the placement of engineered fill or other construction materials, the exposed subgrade should be observed by ECS. The exposed pavement subgrade should be proof-rolled with construction

equipment having a minimum axle load of 10 tons (e.g., large smooth drum roller in granular soils or fully loaded tandem-axle dump truck in cohesive soils). Proof-rolling should be traversed with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying localized yielding materials.

Subgrade areas where proof-rolling identifies rutting or deflection that exceeds 1-inch should be improved prior to the placement of subsequent engineered fill or other construction materials. Methods of stabilization, such as undercutting, moisture conditioning, or chemical stabilization should be discussed with ECS to identify possible solutions. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

Some floor slab areas may be inaccessible to appropriate proof-roll equipment. These areas should be evaluated with hand-operated testing equipment to check the subgrade support characteristics. Near surface subgrade soils having a high moisture content and/or those having N-values less than 10 bpf may not pass a proof-roll and may need to be undercut or improved. Some undercutting or repair of unstable subgrade soils should be anticipated during slab and pavement subgrade preparation. If construction will occur during wet times of the year (such as during the spring or fall months), or immediately following extended periods of rain, then seasonal reduction of the near surface soil strength may occur. This may cause additional unstable or pumping subgrade areas for constructability concerns. The actual quantity of the subgrade undercut, or stabilization should be determined with the assistance of ECS at the time of construction.

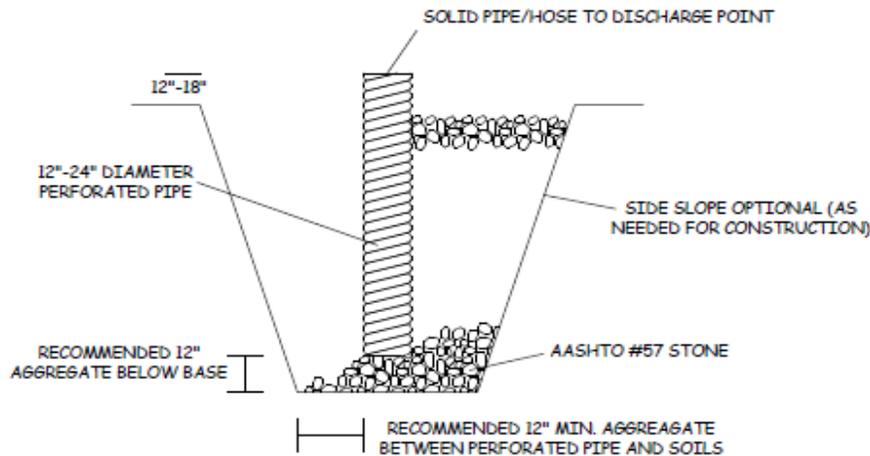
5.1.3 Site Temporary Dewatering

The contractor shall make their own assessment of temporary dewatering needs based upon the limited subsurface groundwater information presented in this report. Soil sampling is not continuous, and thus soil and groundwater conditions may vary between sampling intervals (typically 5 feet). If the contractor believes additional subsurface information is needed to assess dewatering needs, then they should obtain such information at their own expense. ECS makes no warranties or guarantees regarding the adequacy of the provided information to determine dewatering requirements; such recommendations are beyond our scope of services.

Dewatering systems are a critical component of many construction projects. Dewatering systems should be selected, designed, and maintained by a qualified and experienced contractor familiar with the geotechnical and other aspects of the project. Failure to properly design and maintain a dewatering system for a given project can result in delayed construction, unnecessary foundation subgrade undercuts, detrimental soil conditions, and localized settlement of nearby infrastructure, foundations, slabs-on-grade, and pavements, etc. Water discharged from site dewatering systems shall be discharged in accordance with local, state, and federal requirements.

Strategies for Addressing Perched Groundwater: The typical primary strategy for addressing perched groundwater seeping into excavations is pumping from trench (or French drain) and sump pits with sump pumps. The inlet of the sump pump is placed at the bottom of the corrugated pipe and the discharge end of the sump is directed to an appropriate stormwater drain.

A typical sump pump drain (found in a sump pit or along a French drain) is depicted below:



Sump Pit/Pump Diagram

A typical French drain consists of an 18 to 24-inches wide by 18 to 24-inches deep bed of AASHTO No. 57 (or similar open graded aggregate) aggregate wrapped in a medium duty, non-woven geotextile and (sometimes) containing a 6-inch diameter, Schedule 40 PVC perforated or slotted pipe. Actual dimensions should be as determined necessary by ECS during construction. After the installation has been completed, the geotextile should be wrapped over the top of the aggregate and pipe followed by placement of backfill. The top of the drain should be positioned at least 18 inches below the design subgrade elevations. Drains should not be routed within the expanded building limits. Pumping wells or a vacuum system could also be used to address perched groundwater. These techniques often are only effective during the initial depletion of the perched water quantity and may quickly be ineffective at addressing accumulation of water from rain, snow, etc.

Strategies for Addressing Water Table Aquifer: We recommend that groundwater be lowered to at least 3 feet below planned subgrades so that excavations and utility subgrades remain stable. Techniques for lowering groundwater deep enough to allow for construction typically include pumping from deep wells with down-hole submersible pumps, vacuum system dewatering (i.e., well points), and possibly eductor wells. These techniques are significantly different from sump pumping and require engineering design. We recommend a delegated design for dewatering and hiring a design/build contractor specializing in dewatering; ECS should be retained to review the delegated design before it is implemented in the construction.

The stabilized pumping rate for the temporary dewatering system shall be established by calculation submitted in the delegated design. The actual dewatering flow rates should be measured during construction to confirm the adequacy of the delegated design. As is often the case, saturated subgrade can exist even after the implementation of the strategies mentioned above. In these instances, adding supplemental dewatering such as French drains and sump pumping (described in the Perched Groundwater Strategy above) are often required.

Surface Drainage: The surface soils may be erodible. Therefore, the contractor should provide and maintain good site surface drainage during earthwork operations to maintain the integrity of the surface soils. Erosion and sedimentation controls utilized for the project should be in accordance with sound engineering practices and local requirements. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area

at a gradient of 1 percent or steeper to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each workday, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to reduce infiltration of surface water.

5.2 EARTHWORK OPERATIONS

5.2.1 Excavation Safety

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

5.2.2 Existing/Previous Construction Considerations

Extreme care must be taken during earthwork utility installation activities adjacent to existing structures scheduled to remain in place. Vibratory compaction equipment can cause interior and exterior building finishes to crack. Mass or localized undercutting adjacent to existing structures may undermine existing foundations and pavements. Excavation below existing foundations and pavements shall consider appropriate preventative measures, such as shoring and underpinning to help prevent loss of subgrade support. In no case shall excavations extend below adjacent foundations and pavements unless the contractor provides underpinning or other forms of engineered support.

Possible remnants of the previous construction on the site may be present. Site preparation will require complete removal and proper disposal of remnants of previous construction, including pavements, foundations, and underground utilities which are not reused, etc. Disposal of debris should be in accordance with local, state, and federal regulations for the material type. Construction remnants left in-place may cause excavation difficulties for new utilities or other future construction.

5.2.3 Existing Man-Placed Fill

Each of the borings contained existing undocumented fill material that extended to a depth of between approximately 7.5 at the pond location and 10 feet below the existing grade at the proposed salt storage shed location. Undocumented fill presents a risk for nonuniform support and excessive settlement because the soils were previously disturbed and potential variations in the density of this material may exist. Additionally, pockets of deleterious materials may be present within or buried by the fill that were not encountered by the test borings. The risk also increases where the material contains more than 5 percent organic content.

Based primarily on the standard penetration N-values, in our opinion the risk of total and/or differential foundation and floor slab settlement exceeding 1 inch and ½ inch, respectively, associated with the existing fill at this site is moderate to high. In addition, the risk of a reduced pavement performance is expected to be moderate to high. However, the risk could be reduced to low for floor slabs and pavements where the existing fill contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch.

Existing Fill Removal: ECS recommends the removal of existing fill from below foundations and from within 2 feet of floor slabs. In addition, we recommend existing fill that contains greater than 5 percent organic content or does not meet the proof-rolling requirements outlined in this report be removed from within 2 feet of the finished pavement grade. The over-excavated material should then be replaced with a properly compacted engineered fill. In addition, where existing fill is encountered within the detention pond excavations, we recommend placement of a minimum 2 feet of compacted clay liner. ECS should be called on to observe and document that the inadequate existing fill materials have been removed prior to the placement of engineered fill or construction of foundations, floor slabs, and pavements.

5.2.4 Engineered Fill

Prior to placement of engineered fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will typically include natural moisture content, Atterberg limits, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Engineered Fill Materials: Materials satisfactory for use as engineered fill should consist of inorganic soils classified as SW, SP, SM, SC, GW, GP, GM, or GC, or a combination of these group symbols, per ASTM D2487, with the following engineering properties and compaction requirements:

ENGINEERED FILL INDEX PROPERTIES	
Subject	Property
Liquid Limit (LL) and Plasticity Index (PI)	LL < 40, PI < 20
Maximum Particle Size	3 inches
Maximum Fines Content Passing No. 200 Sieve	25% by dry weight
Maximum Organic Content	5% by dry weight

ENGINEERED FILL COMPACTION REQUIREMENTS	
Subject	Requirement
Compaction Standard	Modified Proctor, ASTM D1557
Required Compaction	≥ 95% of Max. Dry Density
Moisture Content	-2 to +3% points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

Unsatisfactory Materials: Materials that should not be used as engineered fill include topsoil, organic materials (OH, OL), high plasticity clays and silts (CH, MH), and highly frost susceptible silt,

sandy silt, silty clay, or very silty sand (ML, CL/ML, ML/CL, or SM) (P200 > 25 percent) soils. Such materials removed during grading operations should be placed in approved off-site disposal areas.

On-Site Borrow: None of the soils encountered in the test borings would be feasible to use as engineered fill. On-site soil used as engineered fill should be free of frozen matter, deleterious materials, or chemicals that may result in the material being classified as “contaminated.” Some conditions at the time of construction, such as wet or freezing weather, may preclude the use of on-site soil, and it may be necessary to use an imported less moisture sensitive or less frost susceptible granular material.

Compaction Equipment: Compaction equipment appropriate to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be used for compaction of fine-grained soils (clays). A vibratory steel drum roller or plate compactor should be used for compaction of coarse-grained soils (sands and gravels) as well as to help seal compacted surfaces. Vibratory compaction methods should be done with caution near the water table because an unstable subgrade condition could develop. Static compaction and thinner lifts may be needed near the water table.

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

Engineered fill placed below foundations and within the foundation influence zone should extend 1 foot beyond the outside edges of the footings and from that point, outward laterally 1 foot for every 2 feet of fill thickness below the footing.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, then the softened soils should be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, then a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: It will be important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm and document the anticipated bearing soils and the material exposed in the excavations does not exhibit obvious characteristics that would adversely affect the performance of the foundation system.

5.4 UTILITY INSTALLATIONS

Utility construction should be in accordance with *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*.

Utility Subgrades: ECS expects the soils encountered in our exploration to be generally adequate for support of utility pipes at typical utility depths. The pipe subgrade should be observed and probed for stability by ECS to confirm the encountered materials meet our recommendations. Very loose, organic, or otherwise inadequate material encountered at the utility pipe subgrade elevation should be removed and replaced with compacted engineered fill/pipe bedding material.

Over-excavation of very loose soils can be limited to two times the diameter of utility pipes and one times the width of foundations for vault, manhole, and catch basin structures. We also recommend placement of a minimum 6-ounce non-woven fabric along the bottom and side walls of the pipe trench prior to placement of compacted engineered fill or pipe bedding material in areas where very loose soils remain exposed in the excavation.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. ECS recommends granular bedding consisting of crushed stone chips in accordance with Table 32 and Chapter 8.43.0 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the recommendations for engineered fill given in this report. We recommend cover material consist of material in accordance with Table 36 and Chapter 8.43.3 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Granular backfill material should consist of material in accordance with Table 37 and Chapter 8.43.4 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Excavated material in accordance with Chapter 8.43.5 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*, and as recommended in the *Earthwork Operations* Section of this report could also be used as backfill.

We do not recommend flood compaction of the backfill, especially within a cohesive soil excavation, where cohesive soils are used as backfill, and/or where a shallow water table exists. Mechanical compaction is recommended and preferred since it generally provides more uniform compaction than flood compaction.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report.

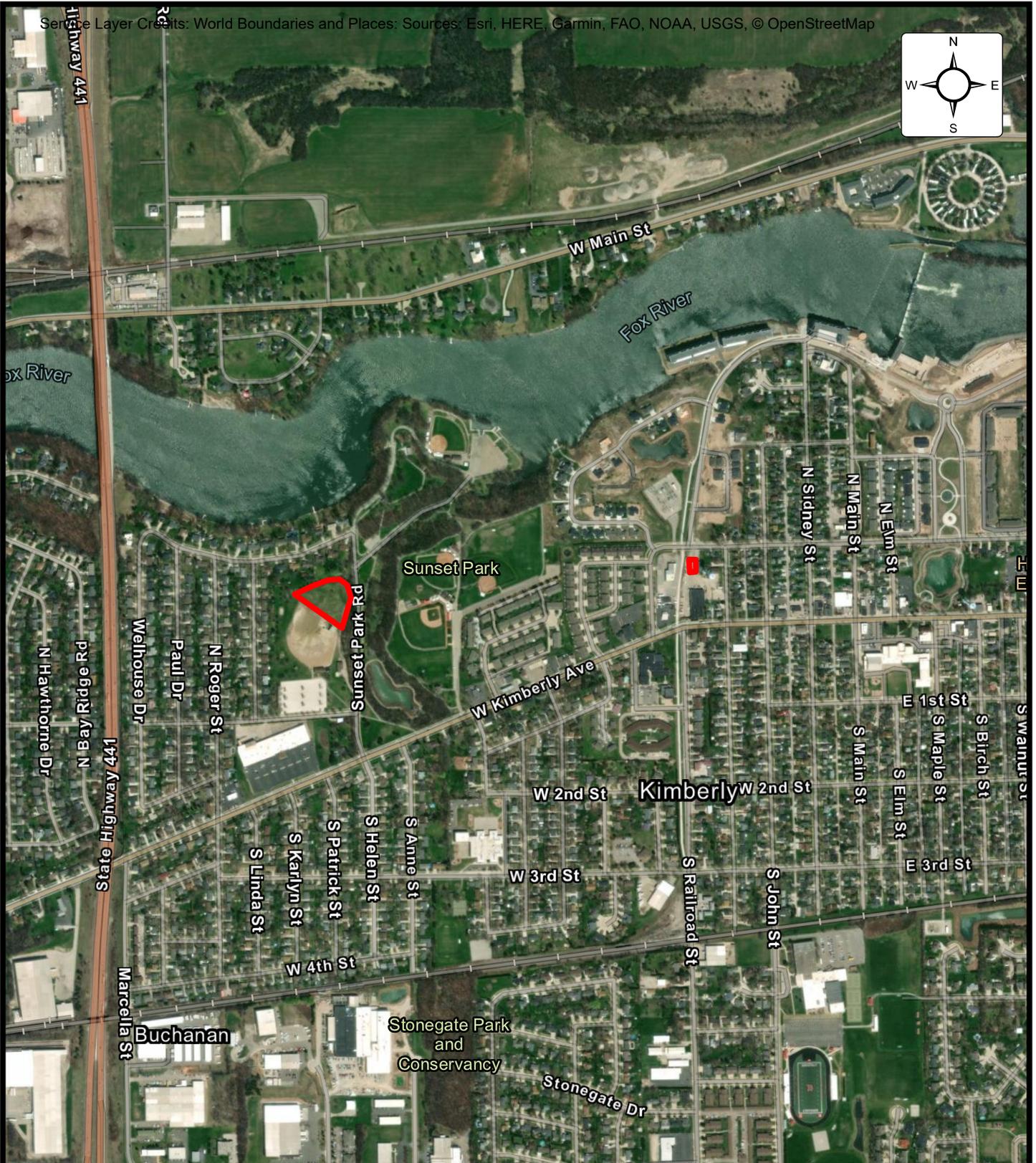
The description of the proposed project is based on information provided to ECS by the Village of Kimberly and McMahon Associates, Inc. If this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction. We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Diagrams and Reports

Site Location Diagram
Boring Location Diagram
Subsurface Cross-Section B-01 and B-02
Soil Survey Map

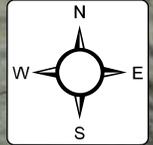


SITE LOCATION DIAGRAM

Proposed Papermaker Pond and Salt Storage Shed

Sunset Park Road and Sunset Drive, Kimberly, WI
Village of Kimberly

ENGINEER YPineda
SCALE 1" = 1000'
PROJECT NO. 59:4384
SHEET
DATE 3/13/2025



Legend

-  Approximate Boring Locations - B
-  Approximate Cross-Section Location

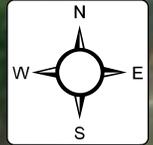


BORING LOCATION DIAGRAM

Proposed Papermaker Pond

Sunset Park Road and Sunset Drive, Kimberly,
Wisconsin
Village of Kimberly

ENGINEER YPineda
SCALE 1" = 50'
PROJECT NO. 59:4384
SHEET
DATE 3/11/2025



W Maes Ave



Legend



Approximate Boring Locations - B



BORING LOCATION DIAGRAM

Proposed Salt Storage Shed

West Maes Avenue, Kimberly, Wisconsin

Village of Kimberly

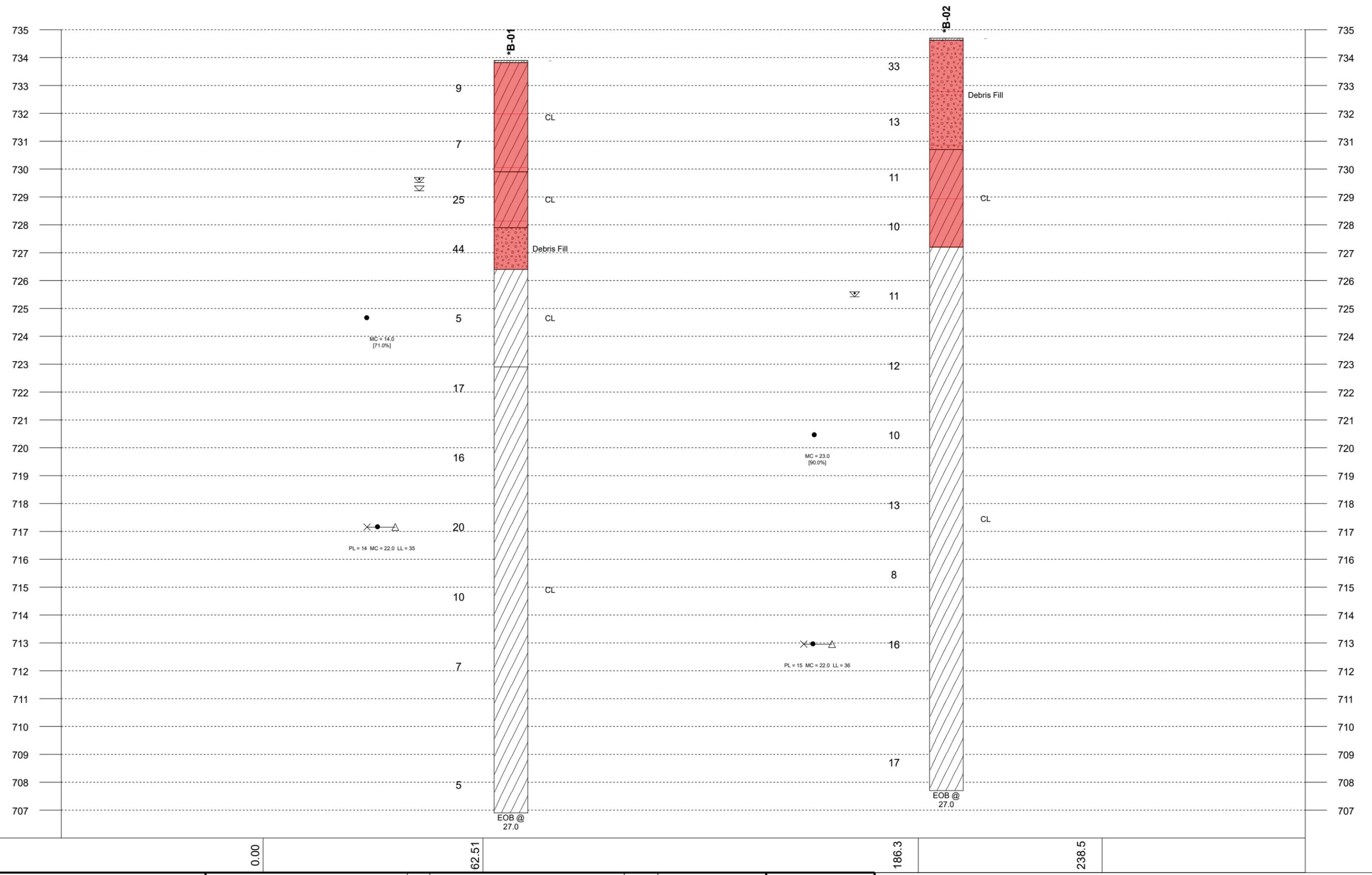
ENGINEER
YPineda

SCALE
1" = 50'

PROJECT NO.
59:4384

SHEET

DATE
3/11/2025



Legend Key

-  Topsoil
-  Debris Fill
-  LEAN CLAY
-  Fill

Notes:
 1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
 2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
 3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
 4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

●	Plastic Limit	●	Water Content	△	Liquid Limit	▽	WL (First Encountered)
X	[FINES CONTENT %]				▽	WL (Completion)	
■	BOTTOM OF CASING					▽	WL (Estimated Seasonal High Water)
⋈	LOSS OF CIRCULATION					▽	WL (Stabilized)
○	CALIBRATED PENETROMETER						



GENERALIZED SUBSURFACE SOIL PROFILE

Section line A-A

Proposed Papermaker Pond

Village of Kimberly

Sunset Park Road and Sunset Drive, Kimberly, Wisconsin, 54136

Project No: 59:4384 Date: 03/18/2025

Soil Map—Outagamie County, Wisconsin



USDA Natural Resources Conservation Service

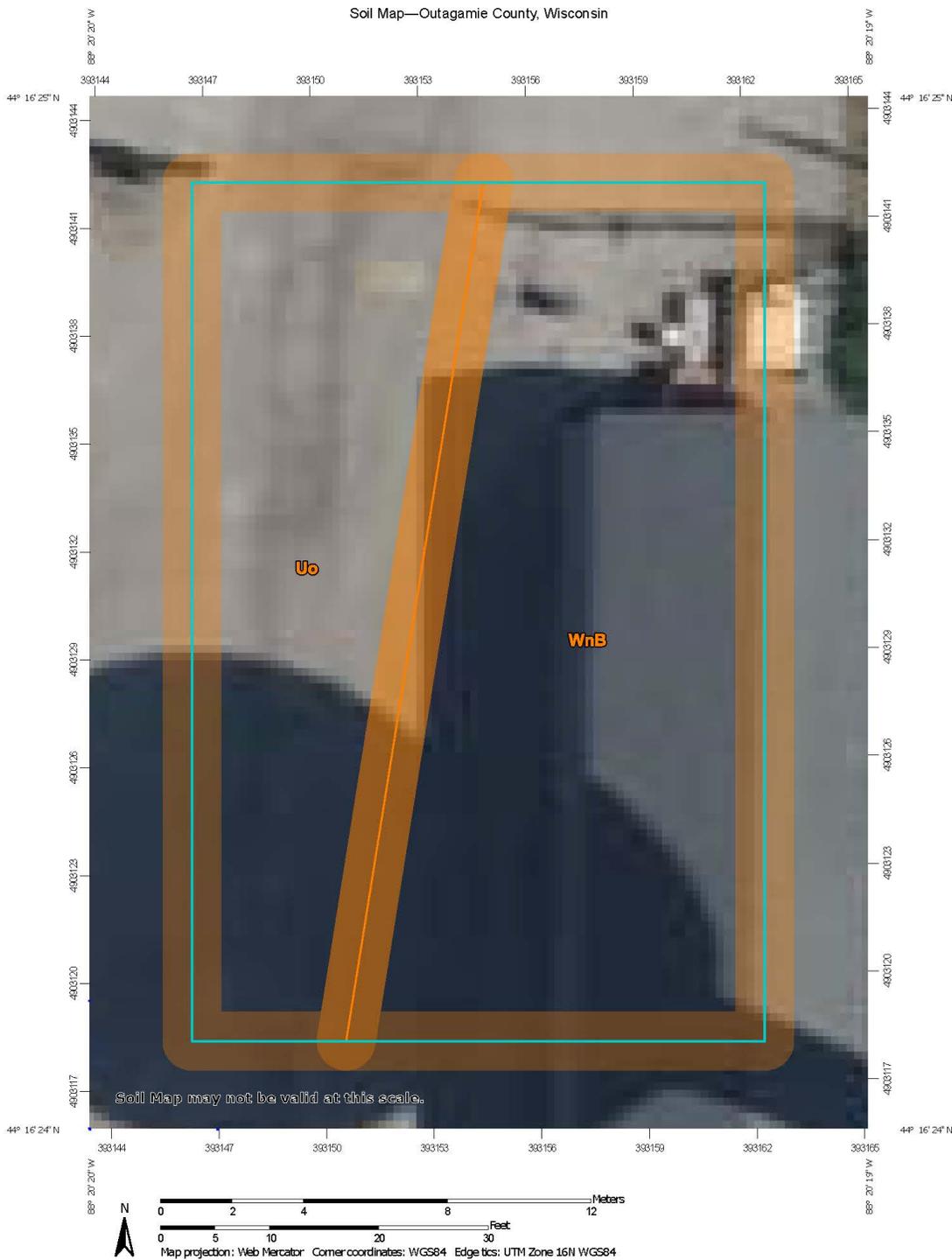
Web Soil Survey National Cooperative Soil Survey



SOIL SURVEY MAP
Proposed Papermaker Pond
Sunset Park Road and Sunset Drive, Kimberly, WI
Village of Kimberly

ENGINEER YPineda
SCALE 1" = 1000'
PROJECT NO. 59:4384
SHEET
DATE 3/13/2025

Soil Map—Outagamie County, Wisconsin



USDA Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey



SOIL SURVEY MAP
Proposed Salt Storage Shed
West Maes Avenue, Kimberly, Wisconsin
Village of Kimberly

ENGINEER YPineda
SCALE 1" = 1000'
PROJECT NO. 59:4384
SHEET
DATE 3/13/2025

APPENDIX B – Field Operations

Subsurface Exploration Procedure: Standard Penetration Testing (SPT)

Reference Notes for Boring Logs

Boring Logs

USDA Classification System

Soil Evaluation – Storm Logs



SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.



**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.



REFERENCE NOTES FOR BORING LOGS

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

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

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

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, QP ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

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

WATER LEVELS ⁶	
	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK			
FILL	POSSIBLE FILL	PROBABLE FILL	ROCK

¹Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

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

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

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

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

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

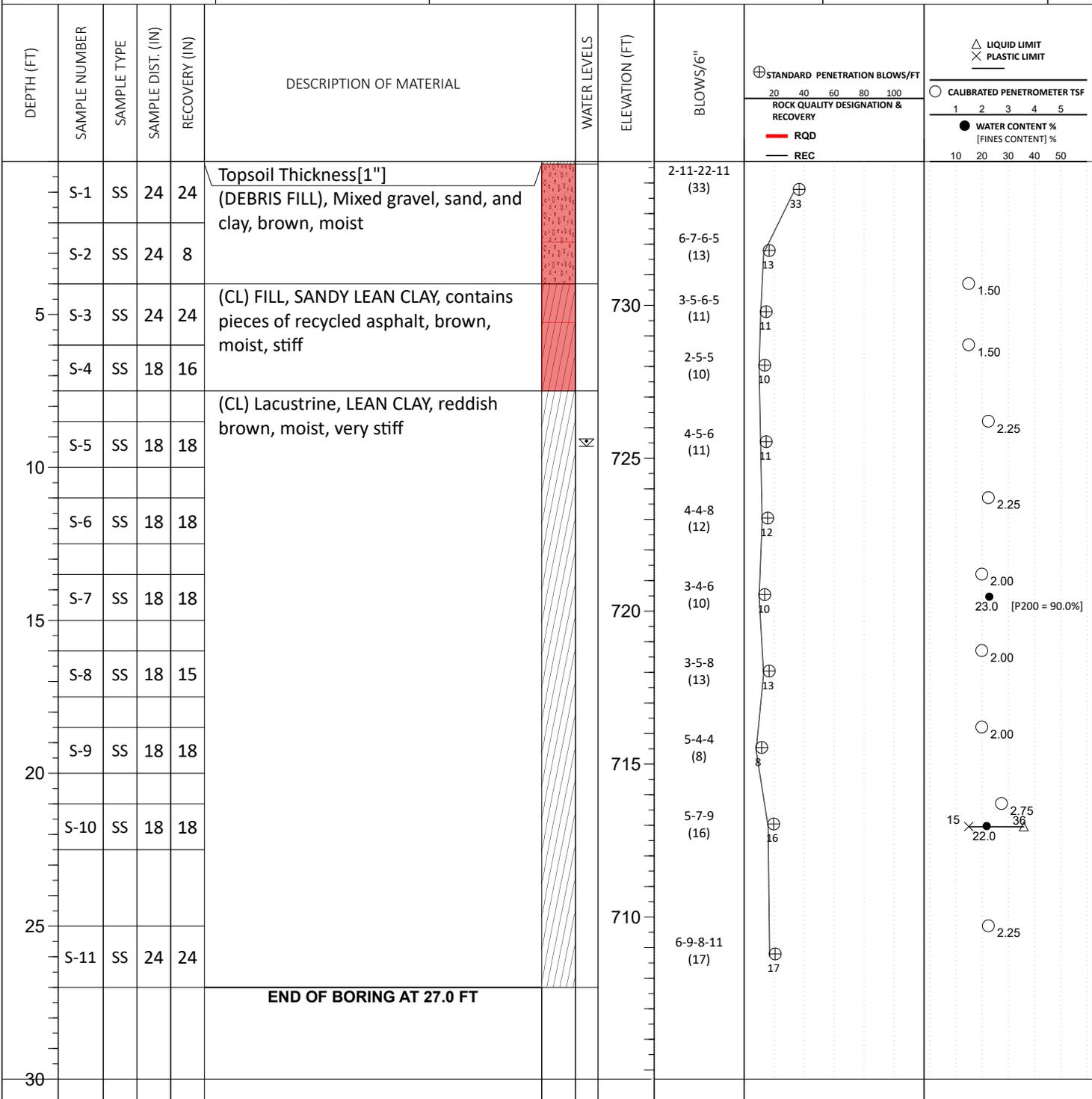
⁷Minor deviation from ASTM D 2488-17 Note 14.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-17.

CLIENT: Village of Kimberly	PROJECT NO.: 59:4384	BORING NO.: B-02	SHEET: 1 of 1	
PROJECT NAME: Proposed Papermaker Pond	DRILLER/CONTRACTOR: Dylan Martin-ECS59			

SITE LOCATION:
Sunset Park Road and Sunset Drive, Kimberly, Wisconsin, 54136

LATITUDE: 44.272907	LONGITUDE: -88.348913	STATION:	SURFACE ELEVATION: 734.7	LOSS OF CIRCULATION
			BOTTOM OF CASING 	



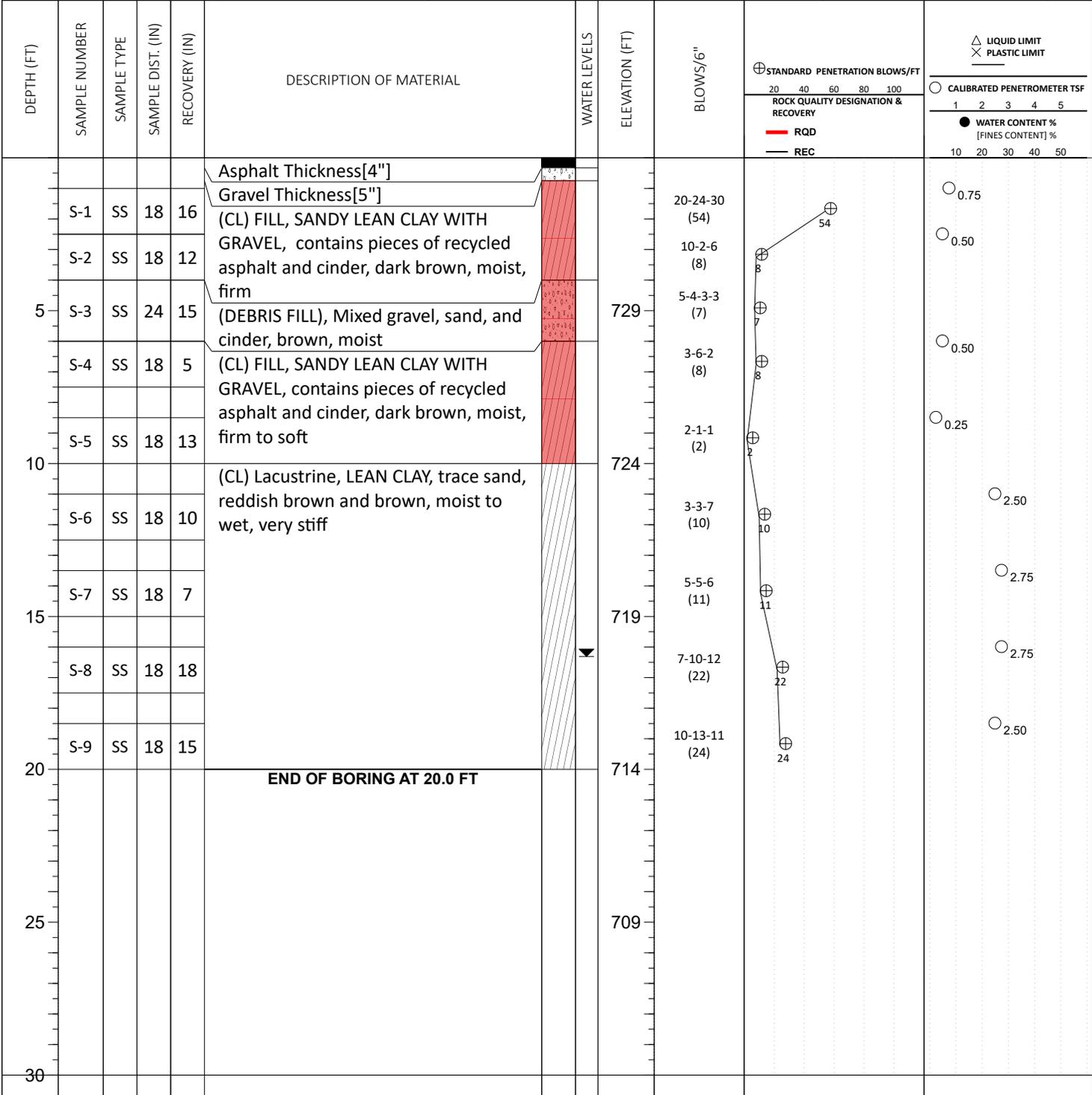
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered)	None	BORING STARTED:	Mar 09 2025	CAVE IN DEPTH:
▼ WL (Completion)	None	BORING COMPLETED:	Mar 09 2025	HAMMER TYPE: Auto
∇ WL (Seasonal High Water)		EQUIPMENT:	Diedrich D-50	DRILLING METHOD: 4-1/4" SSA 0' to 25'
∇ WL (Stabilized)	9.20	LOGGED BY:	YP	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION:
Sunset Park Road and Sunset Drive, Kimberly, Wisconsin, 54136

LATITUDE: 44.273588	LONGITUDE: -88.338851	STATION:	SURFACE ELEVATION: 734.0	LOSS OF CIRCULATION
				BOTTOM OF CASING



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>∇ WL (First Encountered)</td> <td style="text-align: center;">None</td> </tr> <tr> <td>▼ WL (Completion)</td> <td style="text-align: center;">16.20</td> </tr> <tr> <td>∇ WL (Seasonal High Water)</td> <td></td> </tr> <tr> <td>∇ WL (Stabilized)</td> <td></td> </tr> </table>	∇ WL (First Encountered)	None	▼ WL (Completion)	16.20	∇ WL (Seasonal High Water)		∇ WL (Stabilized)		BORING STARTED: Mar 05 2025 BORING COMPLETED: Mar 05 2025 EQUIPMENT: Diedrich D-50	CAVE IN DEPTH: HAMMER TYPE: Auto DRILLING METHOD: 4-1/4" SSA 0' to 18.5'
∇ WL (First Encountered)	None									
▼ WL (Completion)	16.20									
∇ WL (Seasonal High Water)										
∇ WL (Stabilized)										

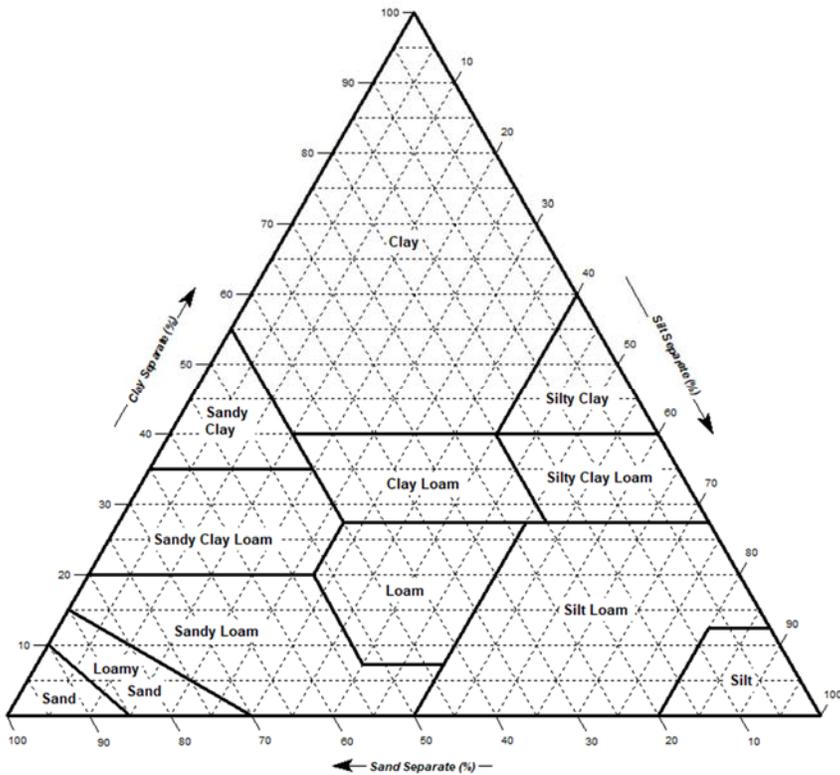
GEOTECHNICAL BOREHOLE LOG



U.S. Department of Agriculture (USDA) Soil Classification System

Texture Triangle

Fine Earth Texture Classes (——)



Texture Class

Texture Class or Subclass	Code	
	Conv.	NASIS
Coarse Sand	cos	COS
Sand	s	S
Fine Sand	fs	FS
Very Fine Sand	vfs	VFS
Loamy Coarse Sand	lcos	LCOS
Loamy Sand	ls	LS
Loamy Fine Sand	lfs	LFS
Loamy Very Fine Sand	lvfs	LVFS
Coarse Sandy Loam	cosl	COSL
Sandy Loam	sl	SL
Fine Sandy Loam	fsl	FSL
Very Fine Sandy Loam	vfsl	VFSL
Loam	l	L
Silt Loam	sil	SIL
Silt	si	SI
Sandy Clay Loam	scl	SCL
Clay Loam	cl	CL
Silty Clay Loam	sicl	SICL
Sandy Clay	sc	SC
Silty Clay	sic	SIC
Clay	c	C

Texture Modifiers – Conventions for using “Rock Fragment Texture Modifiers” and for using textural adjectives that convey the “% volume” ranges for Rock Fragments – Size and Quantity.

Fragment Content % By Volume	Rock Fragment Modifier Usage
< 15	No texture adjective is used (noun only; e.g., <i>loam</i>).
15 to < 35	Use adjective for appropriate size; e.g., <i>gravelly</i> .
35 to < 60	Use “very” with the appropriate size adjective; e.g., <i>very gravelly</i> .
60 to < 90	Use “extremely” with the appropriate size adjective; e.g., <i>extremely gravelly</i> .
≥ 90	No adjective modifier. If ≤ 10% fine earth, use the appropriate noun for the dominant size class; e.g., <i>gravel</i> . Use terms in lieu of texture.

Texture Modifiers – (Adjectives)

Rock Fragments: Size and Quantity	Code		Criteria: Percent (by volume) of total rock fragments and dominated by (<i>name size</i>):
	Conv.	PDP/NASIS	
Rock Fragments (> 2mm; ≥ Strongly Cemented)			
Gravelly	GR	GR	≥ 15% but < 35% gravel
Fine Gravelly	FGR	GRF	≥ 15% but < 35% fine gravel
Medium Gravelly	MGR	GRM	≥ 15% but < 35% med. gravel
Coarse Gravelly	CGR	GRC	≥ 15% but < 35% coarse gravel
Very Gravelly	VGR	GRV	≥ 35% but < 60% gravel
Extremely Gravelly	XGR	GRX	≥ 60% but < 90% gravel
Cobbly	CB	CB	≥ 15% but < 35% cobbles
Very Cobbly	VCB	CBV	≥ 35% but < 60% cobbles
Extremely Cobbly	XCB	CBX	≥ 60% but < 90% cobbles
Stony	ST	ST	≥ 15% but < 35% stones
Very Stony	VST	STV	≥ 35% but < 60% stones
Extremely Stony	XST	STX	≥ 60% but < 90% stones
Bouldery	BY	BY	≥ 15% but < 35% boulders
Very Bouldery	VBY	BYV	≥ 35% but < 60% boulders
Extremely Bouldery	XBY	BYX	≥ 60% but < 90% boulders
Channery	CN	CN	≥ 15% but < 35% channers
Very Channery	VCN	CNV	≥ 35% but < 60% channers
Extremely Channery	XCN	CNX	≥ 60% but < 90% channers
Flaggy	FL	FL	≥ 15% but < 35% flagstones
Very Flaggy	VFL	FLV	≥ 35% but < 60% flagstones
Extremely Flaggy	XFL	FLX	≥ 60% but < 90% flagstones



Soil and Site Evaluation – Stormwater Infiltration

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

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but is not limited to: vertical and horizontal reference point (BM); direction and percent of slope; scale or dimensions; north arrow; and BM referenced to nearest road. <p style="text-align: center;">PLEASE PRINT ALL INFORMATION</p>		COUNTY Outagamie
PROPERTY OWNER Village of Kimberly		PARCEL ID 250168301
PROPERTY OWNER'S MAILING ADDRESS 515 W Kimberly Avenue		PROPERTY LOCATION Govt. Lot <u>5</u> , <u>SW</u> ¼, <u>SW</u> ¼, S <u>28</u> , T <u>21</u> N, R <u>18</u> E Lot #, Block #, Subd. Name or CSM #: _____ Municipality: <u>Village of Kimberly</u> <input type="checkbox"/> City <input checked="" type="checkbox"/> Village <input type="checkbox"/> Town Nearest Road: Sunset Park Rd
CITY, STATE, ZIP CODE Kimberly, WI 54136	PHONE 920-788-7507	SOIL MOISTURE Date of soil borings: <u>3/9/25</u> USDA-NRCS WETS VALUE: <input checked="" type="checkbox"/> Dry = 1 <input type="checkbox"/> Normal = 2 <input type="checkbox"/> Wet = 3
Drainage area _____ <input type="checkbox"/> sq. ft. <input type="checkbox"/> acres Test site suitable for (check all that apply): <input type="checkbox"/> Site not suitable <input type="checkbox"/> Bioretention <input type="checkbox"/> Reuse <input type="checkbox"/> Subsurface Dispersal System <input type="checkbox"/> Irrigation <input type="checkbox"/> Other _____		HYDRAULIC APPLICATION TEST METHOD <input checked="" type="checkbox"/> Morphological Evaluation <input type="checkbox"/> Double Ring Infiltrometer <input type="checkbox"/> Other: (specify) _____

B-01 #OBS. Pit Boring Ground Surface Elevation 733.9 ft. Elevation of Limiting Factor 729.3 ft.

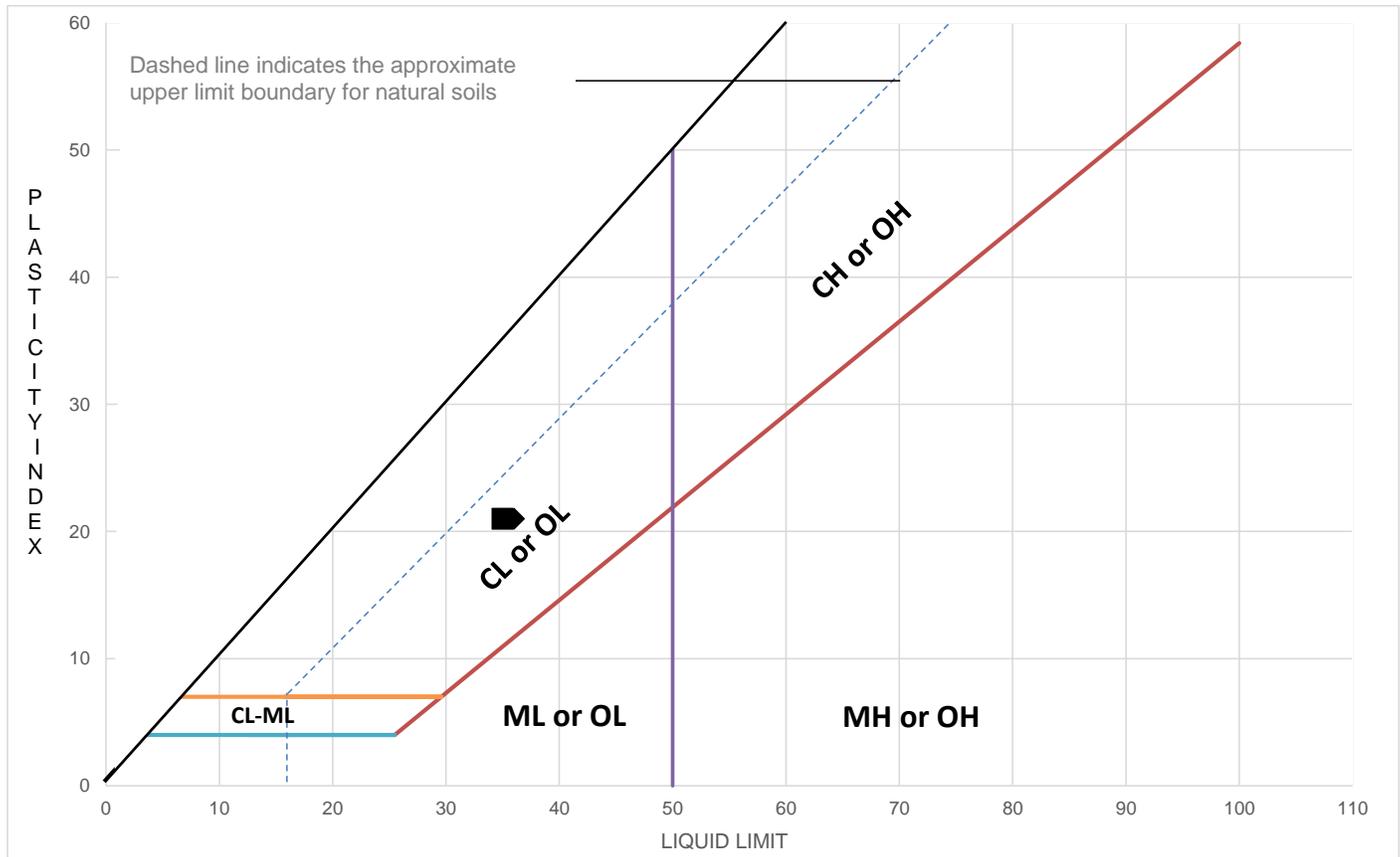
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-1	10YR 3/3	Topsoil	cl	1,f,sbk	fr	G	0-5	70-75	0.03
--	1-48	7.5YR 4/3	No Redox Features	cl	2,vf,sbk	fr-fi	G	0-5	70-75	0.03
--	48-72	7.5YR 3/2	No Redox Features	gr-cl	2,vf,sbk	fr	G	10-15	65-70	0.03
--	72-90	10YR 2/1	No Redox Features	xgr-s	2,f,gr	lo	D	70-75	10-15	3.60
C	90-132	5YR 4/4	No Redox Features	cl	2,vf,sbk	fr	D	0-5	70-75	0.03
C	132-324	5YR 4/4	No Redox Features	c	2,vf,sbk	fi-fr	--	0-5	90-95	0.07

Comments:
H2O at 4.6 feet

APPENDIX C – Laboratory Test Results

Liquid and Plastic Limits Test Report

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS (ASTM D4318-10 (MULTIPOINT TEST))

Symbol	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	B-01	S-8	16.00-17.50	35	14	21					
◆	B-02	S-10	21.00-22.50	36	15	21					

Project: Papermaker Pond and Salt Storage Shed
 Client: Village of Kimberly

Project No.: 59:4384
 Date Reported: 3/12/2025



Office / Lab
 ECS Midwest LLC - Green Bay

Address
 1280 Parkview Road
 Green Bay, WI 54304

Office Number / Fax
 (920)347-9040
 (920)347-9044

Tested by YPineda	Checked by YPineda	Approved by MMeyer	Date Received 3/9/2025
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APPENDIX D – Supplemental Report Documents

Important Information about This Geotechnical-Engineering Report

Important Information about This

Geotechnical-Engineering Report

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

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

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

Understand the Geotechnical-Engineering Services Provided for this Report

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

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

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

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

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

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

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

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

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer About Change

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

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

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

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

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

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

This Report’s Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

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

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

SECTION 00 31 46.00

PERMITS

1. Applicable Permits

- 1.1 Copies of applicable permits are bound in Section 00 31 46.00 - Permits, and follow this page.
- 1.2 The following permits are being obtained by the Village of Kimberly.
 - 1.2.1 Wisconsin Department of Natural Resources (DNR) NOI

END OF SECTION

SECTION 00 41 00.00

BID FORM

PROJECT: Contract No. K0001-09-25-00156

PAPERMAKER STORMWATER MANAGEMENT POND
For The
VILLAGE OF KIMBERLY
Outagamie County, Wisconsin

TIME: Bids to be received until **10:00 a.m.**, local time.

DATE: **April 16, 2025.**

ADDRESS: Danielle Block, Administrator\DPW
VILLAGE OF KIMBERLY
515 W. Kimberly Avenue
Kimberly, WI 54136

STATEMENT OF UNDERSTANDING:

Having carefully examined the site of the proposed work; being fully informed of the conditions to be met in the prosecution and completion of this work; having read and examined the Contract Documents and Drawings applicable to this work; agreeing to be bound accordingly; the undersigned proposes to furnish all necessary labor, materials and equipment to complete the construction indicated on the Drawings and described in the Specifications to include all described incidentals and complete project restoration for the price listed. The CONTRACTOR's Bid price shall include all applicable taxes.

ADDENDA ACKNOWLEDGMENT:

We have procured and examined the written Addenda issued prior to Bidding. These Addenda are numbered ____, ____, ____, ____, ____. We further understand that failure to fully list the numbers of all published Addenda may be cause for the OWNER to reject this Bid.

ON-LINE BIDDING:

On-line bid submission is required (non-refundable fee \$55.00) for this project. Bidders are to provide a bid on-line via QuestCDN's v-Bid system. Instructions are provided on the Project Information on the QuestCDN website or by calling 952-233-1632.

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
Village of Kimberly | Outagamie County, Wisconsin
(continued)

BASE BID

Item	Quantity / Unit	Description	Unit Price	Total
1.	1 lump sum Per L.S.	Mobilization, Insurance and Bonding	\$	\$
		(words)	(figures)	(total)
2.	720 lin. ft. Per L.F.	Silt Fence	\$	\$
		(words)	(figures)	(total)
3.	1,450 lin. ft. Per L.F.	Sediment Log	\$	\$
		(words)	(figures)	(total)
4.	1 lump sum Per L.S.	Clearing and Grubbing	\$	\$
		(words)	(figures)	(total)
5.	1 lump sum Per L.S.	Common Excavation (Est. 31,145 C.Y.)	\$	\$
		(words)	(figures)	(total)
6.	1,000 sq. yds. Per S.Y.	24 Inch Clay Liner	\$	\$
		(words)	(figures)	(total)
7.	1 lump sum Per L.S.	Geotechnical Engineer / Letter of Opinion	\$	\$
		(words)	(figures)	(total)
8.	1 lump sum Per L.S.	Connect 30 Inch RCP to Manhole and Install Manhole Bench	\$	\$
		(words)	(figures)	(total)
9.	88 lin. ft. Per L.F.	30 Inch Class III RCP with Joint Ties	\$	\$
		(words)	(figures)	(total)

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
Village of Kimberly | Outagamie County, Wisconsin
(continued)

BASE BID

Item	Quantity / Unit	Description	Unit Price	Total
10.	1 each Per Ea.	30 Inch RCP Apron Endwall with Trash Guards	\$	\$
		(words)	(figures)	(total)
11.	32 lin. ft. Per L.F.	12 Inch Class III RCP Storm Sewer with Joint Ties	\$	\$
		(words)	(figures)	(total)
12.	1 each Per Ea.	12 Inch RCP Apron Endwall with Trash Guard	\$	\$
		(words)	(figures)	(total)
13.	1 lump sum Per L.S.	12 Inch DR 17 HDPE Directionally Bored (Approx. Length 146')	\$	\$
		(words)	(figures)	(total)
14.	130 lin. ft. Per L.F.	6 Inch C900 PVC Storm Sewer Including Bend	\$	\$
		(words)	(figures)	(total)
15.	1 lump sum Per L.S.	Clean and Televiser Installed Storm Sewer (+/- 400')	\$	\$
		(words)	(figures)	(total)
16.	1,100 lin. ft. Per L.F.	Clean and Televiser 30" Storm Sewer Upstream of Pond Manhole	\$	\$
		(words)	(figures)	(total)
17.	346 lin. ft. Per L.F.	Clean and Televiser 24" Storm Sewer (Sunset Drive)	\$	\$
		(words)	(figures)	(total)
18.	1 lump sum Per L.S.	Televiser 15" CMP to River (+/- 230')	\$	\$
		(words)	(figures)	(total)

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
Village of Kimberly | Outagamie County, Wisconsin
(continued)

BASE BID

Item	Quantity / Unit	Description	Unit Price	Total
19.	1 lump sum Per L.S.	Storm Manhole 1	\$	\$
		(words)	(figures)	(total)
20.	1 lump sum Per L.S.	Outlet Structure with Trash Racks and Bentonite Anti-Seep Collar	\$	\$
		(words)	(figures)	(total)
21.	100 tons Per TON	Medium Rip Rap	\$	\$
		(words)	(figures)	(total)
22.	3 tons Per TON	Heavy Rip Rap	\$	\$
		(words)	(figures)	(total)
23.	100 sq. yds. Per S.Y.	Geotextile Fabric Type HR Under Rip Rap	\$	\$
		(words)	(figures)	(total)
24.	1 lump sum Per L.S.	New 6 Inch Pulverized Topsoil, Temporary Seed, Mulch for Prairie Areas (Est. Approx. 4 acres)	\$	\$
		(words)	(figures)	(total)
25.	4,600 sq. yds. Per S.Y.	E-Mat	\$	\$
		(words)	(figures)	(total)
26.	1 lump sum Per L.S.	Prairie Seeding (Approx. 4 acres)	\$	\$
		(words)	(figures)	(total)

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
Village of Kimberly | Outagamie County, Wisconsin
(continued)

BASE BID

Item	Quantity / Unit	Description	Unit Price	Total
27.	405 lin. ft. Per L.F.	Salvage Existing 6.5' Chain Link Fence, Posts, and Top Rail	\$	\$
		(words)	(figures)	(total)
28.	405 lin. ft. Per L.F.	Reinstall Salvaged Fence with Salvaged Top Rail and New Bottom Tension Wire	\$	\$
		(words)	(figures)	(total)
29.	120 lin. ft. Per L.F.	New 6.5' Chain Link Fence with Posts, Top Rail, and Bottom Tension Wire	\$	\$
		(words)	(figures)	(total)
30.	1 lump sum Per L.S.	New 6.5' High x 10 Foot Wide Gate with Posts	\$	\$
		(words)	(figures)	(total)
31.	1 lump sum Per L.S.	Remove Existing Barbwire and Supports on Existing West Fence (Approx. 540 L.F.)	\$	\$
		(words)	(figures)	(total)
32.	1 lump sum Per L.S.	3 Inch Asphalt Restoration	\$	\$
		(words)	(figures)	(total)
33.	11 each Per Ea.	Burr Oak	\$	\$
		(words)	(figures)	(total)
34.	9 each Per Ea.	White Pine	\$	\$
		(words)	(figures)	(total)

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
 Village of Kimberly | Outagamie County, Wisconsin
 (continued)

BASE BID

Item	Quantity / Unit	Description	Unit Price	Total
35.	11 each Per Ea.	Austrian Pine	\$	\$
		(words)	(figures)	(total)
36.	1 lump sum Per L.S.	Storm Manhole 90 Pipe Modification on Sunset Drive	\$	\$
		(words)	(figures)	(total)
37.	1 lump sum Per L.S.	15" CMP Repair on Sunset Drive	\$	\$
		(words)	(figures)	(total)
38.	12 cu. yds. Per C.Y.	Bulkhead and Sand Slurry 15" CMP Outfall	\$	\$
		(words)	(figures)	(total)
TOTAL (Items 1. through 38., inclusive)				

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
 Village of Kimberly | Outagamie County, Wisconsin
 (continued)

SUBCONTRACTOR TABULATION:

Each Bidder shall enter the names of the Subcontractors proposed to employ and the type of work they are to perform in the spaces provided below. Failure to complete this tabulation may be cause for the rejection of the Bid.

Subcontractor	Type of Work

STARTING & COMPLETION:

If awarded Contract K0001-09-25-00156, the Bidder agrees to commence work at the site on or after September 1, 2025. The Bidder agrees to complete all work in accordance with the following schedule:

1. Substantial Completion of all Work Items Including Temporary Seeding November 14, 2025
2. Final Completion of Asphalt Trail Restoration June 5, 2026
3. Final Completion Prairie Planting December 4, 2026

LIQUIDATED DAMAGES:

The CONTRACTOR further agrees to pay Liquidated Damages for each consecutive calendar day after the date of final completion that the work is not complete and to the satisfaction of the OWNER and ENGINEER. The amount of Liquidated Damages will be equal to the amount of monetary damage the OWNER is sustaining as a result of the project not being complete, which will include all professional and administrative costs.

In the alternative, at the option of the OWNER, the OWNER may invoke Liquidated Damages in the amount of One Thousand & no/100 Dollars (\$1,000.00) per day for each unexcused day of delay by the CONTRACTOR. The alternative shall be at the sole option and discretion of the OWNER.

CONTRACT No. K0001-09-25-00156
PAPERMAKER STORMWATER MANAGEMENT POND
Village of Kimberly | Outagamie County, Wisconsin
(continued)

CONTRACTOR CERTIFICATION:

I hereby certify that all statements herein are made on behalf of _____
_____, (name of corporation, partnership or person submitting Bid) a corporation organized and existing
under the law of the State of _____, a partnership consisting of _____
_____, an individual trading as _____, of the City of
_____, State of _____, that I have examined and
carefully prepared this Bid Form from the Drawings and Specifications, and have checked the same in detail
before submitting this Bid Form; that I have full authority to make such statements and submit this Bid
Form in (its) (their) behalf; and that said statements are true and correct.

COMPANY NAME: _____

Authorized Signature: _____

Title (if applicable): _____

Street Address: _____

P.O. Box: _____

City / State / Zip Code: _____

CONTACT NAME: _____

Telephone Number: _____

Fax Number: _____

E-Mail Address: _____

Sworn and subscribed to before me this _____ day of _____, 20 ____.

(Notary Public)

_____ County, _____ (State)

My commission expires: _____

[Stamp / Seal]

(Bidders should not add any conditions or qualifying statements to this proposal as the proposal may be declared irregular as being not responsive to the Advertisement For Bids.)

SECTION 00 45 43.00

CORPORATION CERTIFICATE

If the CONTRACTOR is a Corporation, the following Certificate should be executed in accordance with the instructions below.

I, _____, certify that I am the Secretary of the Corporation named as CONTRACTOR hereinabove: that _____, who
(name of person executing the Contract)

signed the Contract on behalf of the CONTRACTOR, was then _____ of said Corporation;
(title)

that said Contract was duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

Secretary

1. If the Contract is signed by the Secretary of the Corporation, the above Certificate should be executed by some other Officer of the Corporation, under the Corporate Seal. In lieu of the Certificate, there may be attached to the Contract copies of the records of the Corporation as will show the official character and authority of the Officers signing, duly certified by the Secretary or Assistant Secretary under the Corporate Seal to be true copies.

The full name and business address of the CONTRACTOR should be inserted and the Contract should be signed with the official signature. Please have the name of the signing party or parties typewritten or printed under all signatures to the Contract.

2. Or, if the CONTRACTOR should be operating as a Partnership, a Partner should sign the Contract. If the Contract is not signed by a Partner, there should be attached to the Contract a duly authenticated Power-Of-Authority evidencing the signers' authority to sign such Contract for and on behalf of the Partnership.
3. Or, if the CONTRACTOR is an Individual, the trade name (if the CONTRACTOR is operating under a trade name) should be indicated in the Contract and the Contract should be signed by such individual. If signed by one other than the CONTRACTOR, there should be attached to the Contract a duly authenticated Power-Of-Authority evidencing the signer's authority to execute such Contract for and on behalf of the CONTRACTOR.

SECTION 00 51 00.00

NOTICE OF AWARD

Dated: _____

To: _____(Contractor)

Contract No. _____

Project: _____

You are notified that your Bid, dated _____, for the above Contract has been considered. You are the apparent successful Bidder and have been awarded a Contract for _____.

The Contract Price of your Contract is _____ Dollars (\$ _____).

You must comply with the following conditions precedent within **15-days** of the date of this Notice of Award, that is by _____.

1. You must deliver to the OWNER three (3) fully executed counterparts of the Agreement including all the Contract Documents.
2. You must deliver with the executed Agreement the Contract Security (bonds), as specified in the Instructions to Bidders, General Conditions (Paragraph 6.01) and Supplementary Conditions.
3. You must deliver Insurance Certification complying with the General Conditions and Supplementary Conditions of the Contract Documents.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your Bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

One (1) fully signed counterpart of the Agreement, with the Contract Documents attached, will be returned to you within 15-days after you comply with the above noted conditions.

OWNER:

(authorized signature)

(title)

Witness: _____

SECTION 00 52 00.00

**FORM OF AGREEMENT
BETWEEN OWNER & CONTRACTOR**

THIS AGREEMENT is dated as of the _____ day of _____ in the
year 20 _____ by and between:

(hereinafter call OWNER) and

(hereinafter called CONTRACTOR)

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1 WORK

- 1.1. CONTRACTOR shall complete all work as specified or indicated in the Contract Documents. The work is generally described as follows:

Contract No. _____
Specification Title: _____

- 1.2. The project for which the work under the Contract Documents may be the whole or only a part is generally described as follows:

Contract No. _____
Contract Title: _____

Article 2 ENGINEER

- 2.1. The Project has been designed by McMahon Associates, Inc., who is hereinafter called ENGINEER, and who will assume all duties and responsibilities and will have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the work in accordance with the Contract Documents.

Article 3 CONTRACT TIME

- 3.1. The work shall be Substantially Complete within _____ days after the date when the Contract Time commences to run, as provided in the Bid Form, and completed to the point of final acceptance by the OWNER, ready for final payment in accordance with Paragraph 15.06 of the General Conditions, and to the point of Final Completion by _____.

- 3.2. Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the work is not complete within the time specified in Paragraph 3.1., above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. Should the Contract not be completed in the prescribed time allotment, the OWNER shall document the damages actually caused by the untimely completion of the work. Damages shall be deducted from the Contract by the OWNER after the project has been completed.
- 3.3. In the alternative, at the option of the OWNER, the OWNER may invoke Liquidated Damages in the amount of _____ & no/100 Dollars (\$_____) per day for each unexcused day of delay by the CONTRACTOR. The alternative shall be at the sole option and discretion of the OWNER.

Article 4 CONTRACT PRICE

- 4.1. OWNER shall pay CONTRACTOR for performance of the work in accordance with the Contract Documents in current funds as follows:

Contract: _____
 _____ (words) & ____/100 Dollars
 (\$ _____) (figures)

Article 5 PAYMENT PROCEDURES

- 5.1. 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.
- 5.2. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications For Payment as recommended by ENGINEER, on or about the last day of each month during construction, as provided below. All progress payments will be on the basis of the progress of the work measured by the Schedule Of Values provided for in Paragraph 15.01 of the General Conditions.
 - 5.2.1. The amount of retainage with regard to progress payments will be 5% until 50% of the work is completed. At 50% completion, further partial payments will be made in full to the CONTRACTOR, and no additional amounts will be retained until the ENGINEER certifies that the project is not proceeding satisfactorily, but amounts previously retained will not be paid to the CONTRACTOR. At 50% completion or any time thereafter, when the progress of the work is not satisfactory, the OWNER may increase the retainage, but in no event may the retainage exceed 10% of the value of the work completed. Upon Substantial Completion, the OWNER may make additional payments retaining an amount sufficient to cover the estimated cost of the work yet to be completed.
- 5.3. Final Payment. Upon final completion and acceptance of the work, in accordance with Paragraph 15.06 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER, as provided in said Paragraph 15.06.

Article 6 INTEREST

- 6.1. All moneys not paid when due hereunder shall bear interest at the legal rate established by the State Law (State Law of the project site) as applicable to money judgments.

Article 7 CONTRACTOR's REPRESENTATIONS

- 7.1. In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:
7.1.1. CONTRACTOR has familiarized themselves with the nature and extent of the Contract Documents, work, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the work.
7.1.2. CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that the CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8 CONTRACT DOCUMENTS

- 8.1. The Contract Documents, which comprise the entire Agreement between OWNER and CONTRACTOR, are attached to this Agreement, made a part hereof and consist of the following:
8.1.1. Specifications bearing the title:
[Blank lines]
and consisting of ____ divisions, as listed in table of contents thereof.
8.1.2. Drawings, consisting of a cover sheet and sheets numbered ____ through ____, inclusive with each sheet bearing the following general title:
[Blank lines]
8.1.3. Addenda, numbered ____ through ____, inclusive.
8.1.4. Geotechnical Data (Section 00 31 31.00).
8.1.5. Permits (Section 00 31 46.00).
8.1.6. CONTRACTOR's Bid (Pages 00 41 00.00-1 through 00 41 00.00-____, inclusive).
8.1.7. Exhibits to this Agreement (Corporation Certificate, Page 00 45 43.00-1, if applicable).

- 8.1.8. Notice Of Award (Page 00 51 00.00-1).
 - 8.1.9. This Form Of Agreement Between Owner & Contractor (Pages 00 52 00.00-1 through 00 52 00.00-___, inclusive).
 - 8.1.10. Notice To Proceed (Page 00 55 00.00-1)
 - 8.1.11. Performance / Payment Bonds (Section 00 61 00.00).
 - 8.1.12. Application For Payment (Page 00 62 76.01-1), Certificate of Payment (00 62 76.02-1), and Change Order (Page 00 63 63.00-1), inclusive.
 - 8.1.13. Standard General Conditions (Pages 00 72 00.00-1 through 00 72 00.00-70, inclusive).
 - 8.1.14. Supplementary Conditions (Pages 00 73 00.00-1 through 00 73 00.00-___, inclusive).
 - 8.1.15. Any modification, including change orders, duly delivered after execution of Agreement.
- 8.2. There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be altered, amended or repealed by a modification (as defined in Article 1 of the General Conditions).

Article 9 MISCELLANEOUS

- 9.1. Terms used in this Agreement, which are defined in Article 1 of the General Conditions, shall have the meanings indicated in the General Conditions.
- 9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law) and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3. OWNER and CONTRACTOR each binds themselves, their partners, successors, assigns and legal representatives to the other party hereto, their partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 9.4. **CONTRACTOR further acknowledges having reviewed Section 7.18, Indemnification (page 39) of the Standard General Conditions of the Construction Contract and consulting with counsel, if necessary, in order to fully understand the legal rights and obligations created therein.**

Article 10 OTHER PROVISIONS

10.1. IN WITNESS WHEREOF, the parties have signed this Agreement in triplicate. One (1) counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 20 ____.

OWNER:

CONTRACTOR:

By: _____
(authorized signature)

By: _____
(authorized signature)

Title

Title

[Corporate Seal]

[Corporate Seal]

Attest: _____

Attest: _____

Address for giving notices:

Address for giving notices:

Approved as to form:

Attorney For The OWNER

SECTION 00 55 00.00

NOTICE TO PROCEED

Dated: _____

To: _____(Contractor)

Contract No. _____

Project: _____

You are notified that the Contract Time under the above Contract will commence to run on _____, 20 _____. By that date, you are to start performing the work and your other obligations under the Contract Documents.

The dates of Substantial Completion and Final Completion are set forth in the agreement; they are _____ and _____, 20 ____, respectively.

Before you may start any work at the site, you must deliver to the OWNER (with copies to ENGINEER) Certificates Of Insurance, which you are required to purchase and maintain in accordance with the Contract Documents.

Work at the site must be started by _____, 20 ____, as indicated in the Contract Documents.

OWNER:

(authorized signature)

(title)

Witness: _____

SECTION 00 61 00.00

CONSTRUCTION PERFORMANCE BOND / PAYMENT BOND

Prepared By
Engineers Joint Contract Documents Committee
EJCDC C-610 / C-615 - 2018 Edition

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: **[Describe modification or enter “None”]**

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: _____	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 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: **[Describe modification or enter “None”]**



McMahon Associates, Inc.
 1445 McMahon Drive P.O. Box 1025
 Neenah, WI 54956 Neenah, WI 54957-1025
 Telephone: (920)751-4200
 FAX: (920)751-4284

APPLICATION FOR PAYMENT

(Owner)

PROJECT: _____
 CONTRACTOR _____
 Contract No. _____
 Project No. _____
 Application No. _____
 Application Date _____
 Period From _____ To _____

Application Is Made For Payment In Connection With The Above Contract.

The following documents are attached:

- Schedule Of Values
- Schedule Of Unit Prices
- Inventory Of Stored Materials

The Present Status Of The Account For This Contract Is As Follows:

Original Contract	\$ _____	Completed To Date	\$ _____
Net Change Orders	\$ _____	Retainage _____%	\$ _____
Current Contract Amount	\$ _____	Subtotal	\$ _____
		Previous Applications	\$ _____

Amount Due This Application: \$ _____

The undersigned Contractor hereby swears, under penalty of perjury, that (1 All previous progress payments received from the Owner, on account of work performed under the Contract referred to above, have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with work covered by prior Applications For Payment under said Contract, being Applications For Payment numbered 1 through _____ inclusive; and 2) All materials and equipment incorporated in said project or otherwise listed in or covered by this Application For Payment are free and clear of all liens, claims, security interests and encumbrances.

Dated _____ 20 _____ _____
(contractor)

COUNTY OF _____ }
 STATE OF _____ } ss By _____
(name & title)

Before me on this _____ day of _____ 20 _____ personally appeared _____
 _____ known to me, who being duly sworn, did depose and say that he/she is the _____
 _____ of the Contractor above mentioned; that he/she
(title)

executed the above Application For Payment and statement on behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

My Commission Expires: _____ _____
(Notary Public)



McMahon Associates, Inc.
 1445 McMahon Drive P.O. Box 1025
 Neenah, WI 54956 Neenah, WI 54957-1025
 Telephone: (920)751-4200
 FAX: (920)751-4284

CERTIFICATE FOR PAYMENT

(Owner)

Contract No. _____
 Project File No. _____
 Certificate No. _____
 Issue Date: _____
 Project: _____

This Is To Certify That, In Accordance With The Contract Documents Dated: (Date Of Contract Agreement)

(Contractor)

Is Entitled To **(Partial) (Final)** Payment For Work Performed Through: (Date Noted On Application For Payment)

- Contractor's Application For Payment Attached.
- Itemized Cost Breakdown Attached.

Original Contract	_____	\$
Net Change Orders	_____	\$
Current Contract Amount	_____	\$

Completed To Date	_____	\$
Retainage _____%	_____	\$
Subtotal	_____	\$
Previously Certified	_____	\$

Amount Due This Payment: \$ _____

Certified By:
McMahon Associates, Inc.
Neenah, Wisconsin

 (Authorized Signature)



McMahon Associates, Inc.
 1445 McMahon Drive P.O. Box 1025
 Neenah, WI 54956 Neenah, WI 54957-1025
 Telephone: (920)751-4200
 FAX: (920)751-4284

CHANGE ORDER

(Contractor)

Contract No. _____
 Project File No. _____
 Change Order No. _____
 Issue Date: _____
 Project: _____

You Are Directed To Make The Changes Noted Below In The Subject Contract:

(Description)	(amount)
TOTAL	(Total Amount)

The Changes Result In The Following Adjustments:

	CONTRACT PRICE	TIME
Prior To This Change Order	\$ _____	_____ days
Adjustments Per This Change Order	\$ _____	_____ days
Current Contract Status	\$ _____	_____ days

Recommended:
McMahon Associates, Inc.
 Neenah, Wisconsin

Accepted:
CONTRACTOR

Authorized:
OWNER

By: _____
 Date: _____

By: _____
 Date: _____

By: _____
 Date: _____

- OWNER Copy
- CONTRACTOR Copy
- ENGINEER Copy (Contract Copy)
- FILE COPY

Four Copies Should Accompany This Change Order
Execute And Return To ENGINEER For Distribution

SECTION 00 72 00.00

STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT

Prepared By
Engineers Joint Contract Documents Committee

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



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GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

3.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term “Standard EJCDC Text” for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using “Track Changes” (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any “Track Changes,” redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

5.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the **License Agreement, 2018 EJCDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at www.ejcdc.org and the websites of EJCDC’s sponsoring organizations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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 73 00.00

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2018 Edition). All provisions, which are not so amended or supplemented, remain in full force and effect. The terms and terminology used in these Supplementary Conditions have the meanings stated in the General Conditions.

SC 2.02 *Copies of Documents*

Delete Paragraph 2.02.A of the General Conditions in its entirety, and insert the following in its place:

- 2.02. A. OWNER shall furnish to CONTRACTOR up to three (3) printed or hard copies of the Drawings and Project Manual, and one (1) set in electronic format. Additional copies will be furnished upon request at the cost of reproduction.

SC 3.06 *Electronic Data*

Add the following new Paragraph 3.06.A. immediately after Paragraph 3.05.B.:

- 3.06. A. Data, including Project Drawings and Specification Manuals, will be made available to CONTRACTOR in electronic media format, which may be relied upon by CONTRACTOR. Upon Contract award, up to three (3) hard copies of the Project Drawings and Specification Manuals will be made available to the CONTRACTOR, and relied upon by the CONTRACTOR.

SC 4.01 *Commencement of Contract Time; Notice to Proceed*

Delete Paragraph 4.01.A. of the General Conditions in its entirety, and insert the following in its place:

- 4.01. A. The Contract Time will commence to run on the day indicated in the Notice to Proceed. If the Notice to Proceed is not issued within 90-days from the date of the Notice of Award, then the Contract is considered null and void.

SC 5.03 *Subsurface and Physical Conditions*

Add the following new paragraphs immediately after Paragraph 5.03.D:

- 5.03. E. The following Reports of explorations and tests of subsurface conditions at or contiguous to the site are known to OWNER:
1. Title of Report: Geotechnical Engineering Report
Proposed Papermaker Pond and
Salt Storage Shed
ECS Project No. 59:4384

Date of Report: March 18, 2025
Preparer of Report: ECS Midwest LLC

Address & Telephone Number of Preparer:
1060 Breezewood Lane, Suite 102
Neenah, WI 54956
Ph. (920) 886-1406

- F. The Reports and Drawings identified above are not part of the Contract Documents, but the 'Technical Data' contained therein, upon which CONTRACTOR may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. CONTRACTOR is not entitled to rely upon any other information and data known to or identified by OWNER or ENGINEER.

SC 5.06 *Hazardous Environmental Conditions at Site*

Delete Paragraph 5.06.A. of the General Conditions in its entirety, and insert the following:

5.06.A.1. & 5.06.A.2.

- a. The following Drawings regarding Hazardous Environmental Conditions (HEC) at the Site are known to OWNER:

1) Title of Drawings: Plan Sheet 16

SC 6.03 *Contractor's Insurance*

Add the following new paragraphs immediately after Paragraph 6.03.C.5.:

- 6.03. C. 6. **Two separate** certificates must be issued; one listing the OWNER as Certificate Holder, and one listing the ENGINEER as Certificate Holder:
7. The OWNER's Certificate should list the OWNER as an additional insured under the General Liability policy.
8. The ENGINEER's Certificate should list McMahon Associates, Inc. as an additional insured under the General Liability policy

Add the following new paragraph immediately after Paragraph 6.03.C.:

- 6.03. D. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
1. Worker's Compensation, and related coverages under Paragraph 6.03.A. of the General Conditions:
- | | | |
|----|---|-------------|
| a. | State: | Statutory |
| b. | Applicable Federal (e.g. Longshoreman's): | Statutory |
| c. | Employer's Liability: | \$1,000,000 |

2. CONTRACTOR's Commercial General Liability under Paragraphs 6.03.A. of the General Conditions, which shall include completed operations and product liability coverages, and eliminate the exclusion with respect to property under the care, custody and control of CONTRACTOR:
 - a. Bodily Injury

\$1,000,000	Each Occurrence
\$2,000,000	Annual Aggregate, Products & Completed Operations
 - b. Property Damage

\$500,000	Each Occurrence
\$2,000,000	Annual Aggregate
 - c. Property Damage Liability will provide Explosion, Collapse and Underground coverages where applicable.
 - d. Personal Injury with employment exclusion deleted

\$1,000,000	Annual Aggregate
-------------	------------------
 - e. Umbrella Liability

\$2,000,000	Annual Aggregate
-------------	------------------
3. Comprehensive Automobile Liability
 - a. Bodily Injury

\$1,000,000	Each Occurrence
\$2,000,000	Annual Aggregate
 - b. Property Damage

\$500,000	Each Occurrence
-----------	-----------------
 - c. Umbrella Liability

\$2,000,000	Annual Aggregate
-------------	------------------
4. Contractual Liability Endorsement
 - a. Bodily Injury

\$2,000,000	Each Occurrence
-------------	-----------------
 - b. Property Damage

\$500,000	Each Occurrence
\$1,000,000	Annual Aggregate

SC 7.02 *Supervision and Superintendence*

Add the following new paragraph 7.02.C. immediately after Paragraph 7.02.B:

- 7.02. C. It shall be the CONTRACTOR's sole responsibility to select and implement the means, methods, techniques, sequences and procedures of construction that will

prevent moisture infiltration, and to provide adequate ventilation to allow for the dissipation of any moisture that might accumulate within the work. The Drawings and Specifications are not intended to depict each and every detail required by the CONTRACTOR in their performance of the work. Means and methods are the responsibility of the CONTRACTOR. Therefore, the CONTRACTOR is in the responsible position to verify that work performed by the CONTRACTOR is completed to prevent moisture infiltration and maintain an environment reasonably free of moisture.

SC 7.10 *Taxes*

Add the following new Paragraph 7.10.B. immediately after Paragraph 7.10.A:

- 7.10. B. OWNER is exempt from payment of sales and compensating use taxes of the State of Wisconsin and of cities and counties thereof on all materials to be incorporated into the Work.
1. OWNER will furnish the required certificates of tax exemption to CONTRACTOR for use in the purchase of supplies and materials to be incorporated into the Work.
 2. OWNER'S exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by CONTRACTOR, or to supplies or materials not incorporated into the Work.

SC 9.13 *Maintenance*

Add a new Paragraph 9.13.A. to the General Conditions, which shall read as follows:

- 9.13. A. The OWNER shall be responsible for maintenance of the project, or portions of the project, which have been completed and turned over to the OWNER, for the OWNER's use. All projects are subject to wear and tear, and environmental and man-made exposures. All projects require regular and frequent monitoring and maintenance to prevent damage and deterioration. Such monitoring and maintenance is the sole responsibility of the OWNER. The ENGINEER shall have no responsibility for monitoring or maintenance of such issues or resulting damages.

SC 10.03 *Resident Project Representative*

Add the following new paragraphs 10.03.C. and 10.03.D. immediately after Paragraph 10.03.B:

- 10.03. C. The Resident Project Representative (RPR) will be ENGINEER's employee or agent at the Site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with ENGINEER and CONTRACTOR. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of CONTRACTOR. The RPR shall:

1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning acceptability.
2. *Conferences and Meetings:* Attend meetings with CONTRACTOR, such as Preconstruction Conferences, Progress Meetings, Job Conferences and other project-related meetings.
3. *Liaison:*
 - a. Serve as ENGINEER's liaison with CONTRACTOR, working principally through CONTRACTOR's Authorized Representative, assist in providing information regarding the 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 proper execution of the Work.
4. *Interpretation of Contract Documents:* Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed, and transmit to CONTRACTOR clarifications and interpretations as issued by ENGINEER.
5. *Modifications:* Consider and evaluate CONTRACTOR'S suggestions for modifications in Drawings or Specifications, and report such suggestions, together with RPR's recommendations, to ENGINEER.
6. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-site observations of CONTRACTOR's work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to ENGINEER whenever RPR believes that any part of CONTRACTOR's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

7. *Inspections, Tests, and System Startups:*
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate OWNER's personnel, and that CONTRACTOR maintains adequate records thereof.
 - b. Observe, record, and report to ENGINEER appropriate details relative to the test procedures and systems start-ups.
8. *Records:*
 - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all CONTRACTORS, Subcontractors, and major Suppliers of materials and equipment.
 - b. Maintain records for use in preparing Project documentation.
9. *Reports:*
 - a. Furnish to ENGINEER periodic reports as required of progress of the Work and of CONTRACTOR's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
 - b. Recommend to ENGINEER proposed Change Orders, Work Change Directives, and Field Orders.
 - c. Immediately, notify ENGINEER of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.
10. *Payment Requests:* Review Applications for Payment with CONTRACTOR for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
11. *Completion:*
 - a. Participate in a Substantial Completion review, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
 - b. Participate in a final review in the company of ENGINEER, OWNER, and CONTRACTOR, and prepare a final list of items to be completed and deficiencies to be remedied.
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to ENGINEER concerning

acceptance and issuance of the Notice of Acceptability of the Work.

10.03. D. The RPR shall 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, Suppliers, or CONTRACTOR’s Superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of CONTRACTOR’s work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of OWNER or CONTRACTOR.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.
7. Accept Shop Drawing or Sample submittals.
8. Authorize OWNER to occupy the Project in whole or in part.

SC 14.08 *Period of Limitation*

Add a new Paragraph 14.08 after Paragraph 14.07.D of the General Conditions, which shall read as follows:

SC 14.08 Period of Limitation

- 14.08. A. Nothing contained in this Article 14 shall establish a period of limitation with respect to any other obligation, which the CONTRACTOR has under the Contract Documents.
- B. The establishment of time periods herein relates only to the specific obligation of the CONTRACTOR to correct the work and has no relationship to the time within which the CONTRACTOR'S obligations under the Contract Documents may be enforced, nor to the time within which proceedings may be commenced with respect to this obligation.

SC 15.01 *Progress Payments*

Delete Paragraph 15.01.B.4. of the General Conditions in its entirety, and insert the following in its place:

- 15.01. B.4. The amount of retainage with regard to progress payments will be 5% until 50% of the work is completed. At 50% completion, further partial payments will be made in full to the CONTRACTOR and no additional amounts will be retained unless the ENGINEER certifies that the project is not proceeding satisfactorily, but amounts previously retained will not be paid to the CONTRACTOR. At 50% completion or any time thereafter, when the progress of the work is not satisfactory, the OWNER may increase the retainage, but in no event may the retainage exceed 10% of the value of the work completed. Upon substantial completion, the OWNER may make additional payments retaining an amount sufficient to cover the estimated cost of the work yet to be completed.

SC 15.03 *Substantial Completion*

Add the following new Paragraph 15.03.D.1. immediately after Paragraph 15.03.D:

- 15.03. D.1. The OWNER shall be responsible for maintenance of the project, or portions of the project, which have been completed and turned over to the OWNER, for the OWNER's use. All projects are subject to wear and tear, and environmental and man-made exposures. All projects require regular and frequent monitoring and maintenance to prevent damage and deterioration. Such monitoring and maintenance is the sole responsibility of the OWNER. The ENGINEER shall have no responsibility for monitoring or maintenance of such issues or resulting damages.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01 11 00.00	SUMMARY OF PROJECT
SECTION 01 26 00.00	CHANGE ORDER PROCEDURES
SECTION 01 29 00.00	APPLICATIONS FOR PAYMENT
SECTION 01 31 00.00	COORDINATION & MEETINGS
SECTION 01 33 00.00	SUBMITTALS
SECTION 01 42 00.00	REFERENCE STANDARDS
SECTION 01 45 00.00	QUALITY CONTROL
SECTION 01 50 00.00	CONSTRUCTION FACILITIES & TEMPORARY CONTROLS
SECTION 01 57 00.00	TEMPORARY CONTROLS
SECTION 01 77 00.00	CONTRACT CLOSE-OUT

SECTION 01 11 00.00

SUMMARY OF PROJECT

PART 1 - GENERAL

1.1. PROJECT WORK COVERED BY CONTRACT DOCUMENTS

- A. The work shall consist of construction of the Papermaker Stormwater Management Pond. Items included are grading (approx. 30,000 C.Y.), graveling, clearing and grubbing, miscellaneous storm sewer, asphalt street patching, prairie grass and tree plantings. The project is being funded by a Wisconsin Department of Natural Resources UNPS&N SW construction grant.
- B. The following Contract will be Bid for this project:
 - 1. Contract K0001-09-25-00156 PAPERMAKER STORMWATER MANAGEMENT POND

1.2. CONTRACTS

- A. Perform work of each Prime Contract on a Unit Price Basis Contract with the OWNER.

1.3. ALTERNATE BIDS

- A. There are no Alternate Bids.

1.4. CONTRACTOR'S USE OF SITE & PREMISES

- A. Refer to Paragraph 5.02 in the General Conditions.
 - 1. Confine construction equipment, the storage of materials and equipment, and the operations of workers, to the construction limits shown on the Drawings, to areas permitted by law, ordinance, permits or the requirements of the Contract Documents. Do not unreasonably encumber the premise with construction equipment or other material or equipment.
 - 2. During the progress of the work, keep the premises free from accumulation of waste materials, rubbish and other debris resulting from the work. At the completion of the work, remove all waste materials, rubbish and debris from construction equipment and machinery and surplus materials, and leave the site clean and ready for occupancy by the OWNER. Restore to their original condition those portions of the site not designated for alteration by the Contract Documents.
 - 3. Do not load nor permit any part of any structure to be loaded in any manner that will endanger the structure. Do not subject any part of the work or adjacent property to stresses or pressures that will endanger it. This requirement includes, but is not limited to, the CONTRACTOR's pile driving and surcharge activities.

1.5. DEFINITIONS

- A. 'CONTRACTOR' means the General Contractor or their subcontractors.
- B. 'Provide' means furnished and installed by the CONTRACTOR.
- C. 'Obtain' means acquire and pay for.
- D. 'Demolish' means disconnect and remove materials from site. Demolished materials are the property of the CONTRACTOR.
- E. 'Salvage' means remove and reinstall, or remove and turn over to the OWNER at a location designated on-site.
- F. 'Install' means to place in position for service or use.
- G. 'Furnish' means to supply.
- H. 'Abandon' means disconnect and leave in place after transferring contents to OWNER approved tankage/vessel/process on-site.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 26 00.00

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents and be responsible for informing others in CONTRACTOR's employ or Subcontractors of changes to the Work.
- B. Change Order Forms: Form provided by ENGINEER.

1.2 DOCUMENTATION OF CHANGE IN CONTRACT SUM / PRICE & CONTRACT TIME

- A. Maintain detailed records of Work done on a time and material or force account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. On request, provide additional data to support computations:
 - 1. Quantities of products, labor and equipment.
 - 2. Taxes, insurance and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract time.
 - 5. Credit for deletions from contract, similarly documented.
- D. Support each claim for additional costs and for Work done on a time and material or force account basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times Work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment and subcontracts, similarly documented.

1.3 CHANGE PROCEDURES

- A. Refer to General Conditions.
- B. ENGINEER will advise of minor changes in the Work not involving an adjustment to contract sum/price or contract time as authorized by EJCDC C-700 (2018), Paragraph 11.04 by issuing a written field order.
- C. ENGINEER may issue a proposal request or notice of change, which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications and a change in Contract Time for executing the change. CONTRACTOR will prepare and submit an estimate within 10-days.
- D. CONTRACTOR may propose a change by submitting a request for change to the 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 Sum / Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other CONTRACTORS.
- E. All Change Order related Work shall be started and completed only after formal approval by the OWNER. Any Work completed by the CONTRACTOR without formal approval, constitutes Work for which the OWNER is not required to pay.

1.4 CONSTRUCTION CHANGE AUTHORIZATION

- A. ENGINEER may issue a document (such as a Work Change Directive) instructing the CONTRACTOR to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work and will designate method of determining any change in Contract Sum/Price or Contract Time.
- C. Promptly execute the change in Work.

1.5 STIPULATED SUM CHANGE ORDER

- A. Based upon proposal request and CONTRACTOR's price quotation or CONTRACTOR's request for a Change Order, as recommended by ENGINEER.

1.6 UNIT PRICE CHANGE ORDER

- A. For pre-determined Unit Prices and quantities, the Change Order will be executed on a Unit Price Basis.
- B. For unit costs or quantities of units of Work which are not pre-determined, execute Work under a Construction Change Authorization or Work Change Directive.
- C. Changes in Contract Sum / Price or Contract Time will be computed as specified for Time & Material or Force Account Change Order.

1.7 TIME & MATERIAL OR FORCE ACCOUNT CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the conditions of the Contract.
- B. ENGINEER will determine the change allowable in Contract Sum/Price and Contract Time, as provided in the Contract Documents.
- C. Maintain detailed records of Work done on Time & Material or Force Account basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.8 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: ENGINEER will issue Change Orders for signatures of parties, as provided in the General Conditions of the Contract.

1.9 CORRELATION OF CONTRACTOR SUBMITTALS

- A. 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 Sum / Price.
- B. Promptly revise Progress Schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of Work affected by the change and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 29 00.00

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1. FORMAT

- A. Use the Application for Payment form provided by ENGINEER in the Contract Documents, including continuation sheets when required.
- B. For each listed item in the Schedule of Values or the Bid Sheets, provide a column for listing: Item Number; Description of Work; Scheduled Value; Previous Applications; Work in Place and Stored Materials under this Application; Authorized Change Orders; Total Completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.

1.2. PREPARATION OF APPLICATIONS

- A. Refer to General Conditions for basic provisions regarding CONTRACTOR(s) Applications for Payment.
- B. Prepare Applications for Payment based upon one of the following:
 - 1. The percentage of completion of items enumerated in the Schedule of Values, required in Division 1, Section 01 20 01.00 - Contract Considerations.
 - 2. The Unit Price Schedule.
 - 3. Attach a copy of the Schedule of Values or the Unit Price Schedule to each Application for Payment.
- C. Incomplete or inadequate submittals will be returned to the CONTRACTOR. Provide the Schedule of Values or Unit Price Schedule and Application for Payment in a neatly typed and professional manner.
- D. Execute certification by signature of authorized officer.
- E. Provide an updated Construction Schedule and lien waivers with each Application for Payment.
- F. Provide Record Drawings prior to submitting final Application for Payment.
- G. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of work.
- H. Prepare Application for Final Payment in accordance with Division 1, Section 01 77 00.00 - Contract Close-Out.

1.3. SUBMITTAL PROCEDURES

- A. Submit three (3) copies of each Application for Payment for work on this project to the ENGINEER no later than the tenth (10th) day of the month. Include all work completed as of the last day of the previous month. Submit one (1) additional copy directly to the ENGINEER's On-Site Representative.
- B. Payment Period: Submit at intervals as stipulated in the Agreement.

1.4. SUBSTANTIATING DATA

- A. Submit data justifying dollar amounts in question when ENGINEER requires substantiating information.
- B. Provide one (1) copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

1.5. UNIT PRICES

- A. When Unit Prices constitute the basis for payment for work performed on this project, payment will be made at the Unit Prices Bid for the actual number of units constructed. Make measurements or other determinations necessary to fix the number of units constructed in a manner acceptable to the OWNER and the ENGINEER.
- B. For Lump Sum bid projects, use the Unit Prices when increasing or decreasing the amount of work called for on the Drawings and in this Specification. Use Unit Prices only after the Bidding.

1.6. PAYMENT FOR STORED EQUIPMENT

- A. CONTRACTOR may apply for payment for equipment that has not been delivered to the job site, but is in storage, provided a Storage Agreement has been executed with the OWNER.
- B. The 'Storage Agreement' follows this Section.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

STORAGE AGREEMENT

**SPECIAL PROCEDURE FOR OBTAINING PAYMENT FOR MATERIALS
NOT STORED AT THE SITE OF THE WORK**

OWNER: _____

Project Name: _____

Contract Number: _____

Due to the limited amount of space available for the storage of materials at the site of the _____
_____ (Project), the Owner will, under the following
conditions, approve partial payments for certain materials stored off the premises.

1. Prior Approval. The Contractor shall obtain the approval of the Owner before making any arrangements to obtain a certification for payment for materials stored off the site. Materials must be suitable for storage and must be properly packaged.
2. Storage Site. The Contractor shall provide and maintain a suitable storage site and proper storage conditions, which must be approved in advance by the Owner. The site must be within the State of _____.
3. Storage Conditions. The material covered by the Request for Certification for Partial Payment must be stored above grade and must be properly protected at all times against weather, heat, cold, moisture and other hazards as the material may require. The storage conditions must be approved by the Owner. All protection must be provided by the Contractor at their own expense and must be maintained throughout the storage period.

Material must not be commingled with other similar material but must be stored by itself and must be plainly labeled "Owner."

It must be stored so that it can be readily inspected, measured and counted at all times by the Owner's representatives.

4. Bill of Sale. Request for Certification for Partial Payment for materials stored under the above conditions must be accompanied by a Bill of Sale, properly identifying the material and transferring ownership of the materials to the Owner. The Bill of Sale must be accompanied by an inventory of the stored material together with a description of the storage site by street number and city, or by legal description of the premises.
5. Insurance. The Contractor shall provide and maintain Builder's Risk, Fire and Extended Coverage Insurance on the stored material in the amount of 100% of the value thereof, under the same conditions as for material stored on the site of the project. Unless specifically exempted by the Owner, the Contractor shall provide insurance against loss by theft or vandalism, and the Owner shall be named the beneficiary under the policy, as trustee for all concerned.
6. Responsibility. The Contractor agrees that in accepting partial payment for the stored materials, the Contractor is, in no way, relieved of responsibility for the safe storage of the material and its safe transportation to and installation in the work, or for furnishing and installing the material in strict accordance with plans and specifications.

The Contractor also agrees that acceptance by the Owner of a Bill of Sale for the material does not imply acceptance of the material, which shall be subject to final acceptance or rejection up to the time the Contractor's work is completed and finally accepted.

The Contractor also agrees that the usual guarantees covering their work under the Drawings, Specifications and Contract, are in no way impaired as a result of the partial payment and the acceptance of the Bill of Sale.

The Owner accepts no responsibility in connection with the material.

7. Acceptance. The Contractor shall indicate his acceptance of the above conditions by signing and returning one copy of this Storage Agreement, Proof of Insurance, and Bill of Sale.

ACCEPTED:

Contractor

Authorized Signature

Printed or Typed Name

Date _____

STORAGE CONDITIONS APPROVED:

Owner-Authorized Signature

Printed or Typed Name

Date _____

Material Stored: _____

Site: _____

SECTION 01 31 00.00

COORDINATION & MEETINGS

PART 1 - GENERAL

1.1. COORDINATION

- A. Develop an overall Project Schedule in conjunction with all Subcontractors. Schedule and coordinate the work of each Subcontractor.
- B. Coordinate the work and cooperate with all other trades to facilitate the general progress of the work. Afford all other trades every reasonable opportunity for the installation of their work and for the storage of their material.
- C. Perform work in proper sequence in relation to that of other Subcontractors, as required by construction progress.
- D. Arrange the work and dispose of the materials so as not to interfere with the work or storage of materials of other CONTRACTORS. Join work to that of others in accordance with the intent of the Drawings and Specifications.
- E. Direct Mechanical and Electrical CONTRACTORS to work in cooperation with the General CONTRACTOR, and with each other; and fit their piping, duct work, conduit, etc., into the structures as job conditions demand. All final decisions as to the right-of-way and run of pipe, ducts, etc., will be made by the ENGINEER or their Representative at meetings with responsible representatives of Mechanical Trades CONTRACTORS.
- F. Do not endanger any work of another CONTRACTOR. Do not cut or alter such work of any other CONTRACTOR without the consent of the other CONTRACTOR.
- G. Keep constant check on the progress of the work, so the particular trade can ensure preparation for installation of that trade's work and not cause delay in the progress of the work.
- H. Provide due notice and proper information to other CONTRACTORS of any special provisions necessary for the placing or setting of their work coming in contact with work of other CONTRACTORS. Failing to do so in proper time will result in the CONTRACTOR being held responsible and paying for any and all alterations and repairs necessitated by such neglect.
- I. The responsible party will pay any cost caused by defective or ill-timed work.
- J. 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.
- K. In finished areas (except as otherwise indicated) conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

1.2. GRADES, LINES & LEVELS

A. Pipe Line Construction:

1. Primary line and grade will be furnished by the OWNER and will be established by the ENGINEER. In open cut construction, line and grade stakes will be set parallel to the proposed sewer or water main and offset therefrom in a manner that will best serve the CONTRACTOR's work operations, wherever practical. Stakes will be set opposite each sewer appurtenance or water main fitting and change in line and grade. Render whatever assistance may be required by the ENGINEER and arrange work operations in such manner as to avoid interference with the establishment of primary lines and grades. Check the accuracy of line and grade stakes by means of visual and taping checks, and protect and preserve the stakes. Pay the cost of re-staking, due to the CONTRACTOR's negligence. CONTRACTOR is responsible for the correct transfer of all construction lines and grades from the primary line and grade points, and for the correct alignment and grade of the finished structure, based upon the primary line and grade established by the ENGINEER.

B. Street Construction:

1. ENGINEER will furnish primary line and grade parallel to the proposed work and offset therefrom in a manner that will best serve the CONTRACTOR's work operations, wherever practical. Stakes will be set opposite each storm sewer appurtenance and change in line or grade. Provide whatever assistance may be required by the ENGINEER, and arrange work operations in such manner to avoid interference with the establishment of primary lines and grades. Check the accuracy of line and grade stakes by means of visual and taping checks and protect and preserve the stakes. Pay the cost of re-staking, due to the CONTRACTOR's negligence. CONTRACTOR is responsible for the correct transfer of all construction lines and grades from the primary line and grade points, and for the correct alignment and grade of the finished work, based upon the primary line and grade established by the ENGINEER.
2. Provide the necessary facilities such as levels, rulers and line(s) for transferring the grade and line from the ENGINEER's stakes to the work. Preserve primary line and grade stakes. Furnish and set the string lines or grading stakes. Visually check string lines or grading stakes for error in line or grade. Provide string lines fastened to supporting stakes spaced adequately to permit support of the string without distortion or misalignment. Pull string sufficiently tight to remove any noticeable or measurable sag. Transfer elevations from the primary line and grade stakes. Notify ENGINEER immediately if the visual inspection of the string lines or grading stakes discloses an apparent error.
3. If CONTRACTOR elects to use machine control to construct street base, ENGINEER will provide a 2018 Civil 3D corridor drawing file, linework file, and surface file. Convert these files to information compatible with the machine control system in use.
4. ENGINEER will not set red top stakes unless additionally compensated by CONTRACTOR.

1.3. CUTTING & PATCHING

- A. Each CONTRACTOR is responsible for their own cutting and patching but the work must be performed by Tradespersons experienced in the type of work involved.
- B. Submit written request in advance of cutting or altering elements that affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather exposed or moisture resistant elements.
 - 3. Efficiency, maintenance or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of OWNER or separate CONTRACTOR.
- C. Execute cutting, fitting and patching, including excavation and fill, to complete work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
 - 5. Provide openings in elements of work for penetrations of mechanical and electrical work.
- D. Execute work by methods, which will avoid damage to other work, and provide proper surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling or floor construction; completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the work to the ENGINEER for decision or remedy.

1.4. PRE-CONSTRUCTION CONFERENCE

- A. Attend a Pre-Construction Conference, after the time of Contract award, to discuss the responsibility of each part to the project and to clarify any questions. Include representatives of all CONTRACTORS, including the Superintendents designated for the project, Resident Engineer in charge of observation and principal staff, and representatives of the municipality or governing authority. A representative of the Resident Observation staff will preside over the conference.
- B. A suggested format would include, but not be limited to, the following subjects:
 - 1. Presentation of a proposed Construction Schedule by the General CONTRACTOR.
 - 2. Check of required bonds and insurance certifications prior to the Notice to Proceed.
 - 3. Shop Drawing submittal and approval procedure.
 - 4. Chain of command, direction of correspondence and coordinating responsibility between CONTRACTORS.
 - 5. Request for a weekly project meeting for all involved.
 - 6. If a remodel or alteration project, introduction of the plant superintendent and discussion of the need for maintenance of operations through the construction period, accommodations for plant employees and partial OWNER occupancy.
 - 7. Equal opportunity requirements.
 - 8. Laboratory testing of material requirements.
 - 9. Inventory of material stored on-site provisions.
 - 10. Progress estimate and payment procedure.
 - 11. Posting of signs, if applicable.

1.5. PROGRESS MEETINGS

- A. Hold progress meetings at regularly scheduled intervals to discuss items that directly affect the progress of the project and to adjust the construction progress schedule (or CPM if required, Network Analysis Schedules) so as to assure timely completion of the project. All CONTRACTORS may be requested to attend.
- B. Agenda:
 - 1. Review Minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems and decisions.

4. Identification of problems that impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to work.

1.6. PRE-INSTALLATION CONFERENCES

- A. When required in an individual Specification Section, convene a Pre-Installation Conference at work 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 4-days in advance of meeting date.
- D. Prepare Agenda, preside at Conference, record Minutes and distribute copies within 2-days after Conference to participants, with two (2) copies to ENGINEER.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

1.7. JOB SITE ADMINISTRATION

- A. CONTRACTOR's Responsibilities:
 1. Supervise and direct the work in accordance with the General Conditions.
 2. Assure the work is accomplished in conformance with the Contract Documents.
 3. Supervise all assembly of materials and all labor to complete the work on the project.
 4. Proceed with the work in accordance with the schedule established in such a manner as to ensure completion of the work within the time allotted.

B. ENGINEER's Responsibilities & Authority:

1. Refer to the Standard General Conditions of the Construction Contract.
2. ENGINEER will establish the standards of acceptability for materials and workmanship furnished by the CONTRACTOR.
3. ENGINEER will observe work quality and quantity of the CONTRACTOR according to Contract requirements.
4. ENGINEER will have the authority to recommend to the OWNER rejection of materials or workmanship that does not meet Contract requirements.
5. ENGINEER will act as the OWNER's representative and have authorities, as described in the General Conditions.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 33 00.00

SUBMITTALS

PART 1 - GENERAL

1.1. CONSTRUCTION PROGRESS SCHEDULES

- A. Provide a Construction Progress Schedule. Provide an updated Schedule with each Application For Payment. If an up-dated Schedule has not been submitted, processing of the Application For Payment will be withheld.
- B. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates and duration.
- C. Indicate estimated percentage of completion for each item of work at each submission.
- D. Indicate submittal dates required for Shop Drawings, product data, samples and product delivery dates, including those furnished by OWNER and under Allowances.

1.2. PROPOSED PRODUCTS LIST

- A. Within 15-days after date of OWNER-CONTRACTOR Agreement, submit complete list of major products proposed for use, with name of Manufacturer, trade name and model number of each product.
- B. For products specified only by reference standards, submit Manufacturer, trade name, model or catalog designation and reference standards.

1.3. SHOP DRAWINGS, PRODUCT DATA & SAMPLES

- A. Shop Drawings:
 - 1. After checking and verifying all field measurements, material requirements, etc., submit to the ENGINEER for review, in accordance with the accepted schedule of Shop Drawing submissions, electronic copies (.pdf format) of all Shop Drawings, checked by and stamped with the approval of the CONTRACTOR and identified as stated below. Provide complete data on the Shop Drawings with respect to dimensions, design criteria, materials of construction and the like to enable the ENGINEER to review the information as required.
 - 2. Submit Shop Drawings for the following materials and equipment as applicable.
 - a. All pre-assembled or manufactured building components (doors and windows, toilet partitions, hardware, etc.)
 - b. All heating equipment and accessory items.
 - c. All electrical equipment, fixtures and controls.

- d. All process equipment items, valves, controls, etc.
 - e. Any other items that the CONTRACTOR feels require review by the ENGINEER.
3. Provide Shop Drawings certified by the CONTRACTOR and/or Manufacturer, bearing the name of the Manufacturer, the name of the project, the name of the CONTRACTOR, and the name of the ENGINEER. Provide Shop Drawings written in English with English units. All Shop Drawings not containing these provisions may be returned.
- B. ENGINEER will review Shop Drawings and samples with reasonable promptness, but the ENGINEER's review is only for conformance with the general, overall design concept of the project. The acceptance of a separate item will not indicate acceptance of the assembly in which the item functions. Make any corrections required by the ENGINEER and return corrected electronic copies (.pdf format) Shop Drawings, and resubmit new samples until noted: 'Make Corrections Noted' or 'Reviewed by ENGINEER'. Direct specific attention in writing on resubmitted Shop Drawings, to revisions other than the corrections called for by the ENGINEER on previous submissions. The required CONTRACTOR's stamp of approval on any Shop Drawing or sample constitutes a representation to the OWNER and ENGINEER that the CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data or they assume full responsibility for doing so, and that they have reviewed each Shop Drawing or sample with the requirements of the work and the Contract Documents.
- C. Where a Shop Drawing or sample submission is required by the Specifications, commence no related work until the submission has been reviewed by the ENGINEER. Keep a copy of each reviewed Shop Drawing and each reviewed sample at the site and make available to the ENGINEER.
- D. ENGINEER's review of Shop Drawings or samples does not relieve the CONTRACTOR from their responsibility for any deviations from the requirements of the Contract Documents unless the CONTRACTOR has in writing called the ENGINEER's attention to such deviation at the time of submission and the ENGINEER has given written acceptance to the specific deviation. Any review by the ENGINEER does not relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 42 00.00

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Verify any material or operation specified by reference to a Code (Federal, State or local), publication, published specification of a Manufacturer, a society, an association or other published standards, complies with requirements of the listed document, except when more rigid requirements are specified or are required by applicable Codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at job 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. The contractual relationship of the parties to the Contract will not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.2 ABBREVIATIONS & SYMBOLS

- A. In general, abbreviations and symbols will be listed and defined on the Drawings. Symbols will not be used in the Specification text. Since the number of abbreviations which could be used might cover several pages, abbreviations used are defined in that part of the Specifications to which they apply unless the usage is so generally understood that definition is believed unnecessary.

1.3 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006	ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005	ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601
AASHTO	American Association of State Highway & Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001	AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006

AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740	ASTM	American Society for Testing & Materials 1916 Race Street Philadelphia, PA 19103
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006	AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611	AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AISI	American Iron & Steel Institute 1000 16th Street, N.W. Washington, DC 20036	AWS	American Welding Society 550 LeJeune Road, N.W. Miami, FL 33135
AITC	American Institute of Timber Const. 333 W. Hampden Avenue Englewood, CO 80110	AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
AMCA	Air Movement & Control Association 30 West University Drive Arlington Heights, IL 60004	BIA	Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018	CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10174
APA	American Plywood Association Box 11700 Tacoma, WA 98411	CLFMI	Chain Link Fence Mfg. Institute 1101 Connecticut Avenue, N.W. Washington, DC 20036
ARI	Air-Conditioning & Refrig. Institute 1501 Wilson Boulevard Arlington, VA 22209	CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195
ASHRAE	American Society of Heating, Refrig. & Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329	DHI	Door & Hardware Institute 7711 Old Springhouse Road McLean, VA 22102
ASME	American Society of Mech. Engineers 345 East 47th Street New York, NY 10017	EJCDC	Engineers' Joint Contract Documents Comm. American Consulting Engineers Council 1015 15th Street, N.W. Washington, DC 20005
ASPA	American Sod Producers Association 4415 West Harrison Street Hillside, IL 60162	EJMA	Expansion Joint Manufacturers Assoc. 25 North Broadway Tarrytown, NY 10591

FGMA Flat Glass Marketing Association
3310 Harrison
White Lakes Professional Building
Topeka, KS 66611

FM Factory Mutual System
1151 Boston-Providence Turnpike
P.O. Box 688
Norwood, MA 02062

FS Federal Specification
General Services Administration
Specifications & Consumer Information
Distribution Section (WFSIS)
Washington Navy Yard, Bldg. 197
Washington, DC 20407

GA Gypsum Association
1603 Orrington Avenue
Evanston, IL 60201

ICBO International Conf. of Building Officials
5360 S. Workman Mill Road
Whittier, CA 90601

IEEE Inst. of Electrical & Electronics Engrs
345 East 47th Street
New York, NY 10017

IMIAC International Masonry Industry
All-Weather Council
International Masonry Institute
815 15th Street, N.W.
Washington, DC 20005

MBMA Metal Building Manufacturer's Assoc.
1230 Keith Building
Cleveland, OH 44115

MFMA Maple Flooring Manufacturers Assoc.
60 Rivere Drive
Northbrook, IL 60062

MIL Military Specification
Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120

ML/SFA
Metal Lath/Steel Framing Association
221 North LaSalle Street
Chicago, IL 60601

NAAMM
National Association of
Architectural Metal Manufacturers
221 North LaSalle Street
Chicago, IL 60601

NCMA National Concrete Masonry Association
P.O. Box 781
Herndon, VA 22070

NEBB Nat'l Environmental Balancing Bureau
8224 Old Courthouse Road
Vienna, VA 22180

NEMA National Electrical
Manufacturers' Association
2101 'L' Street, N.W.
Washington, DC 20037

NFPA National Fire Protection Association
Battery March Park
Quincy, MA 02269

NFPA National Forest Products Association
1619 Massachusetts Avenue, N.W.
Washington, DC 20036

NSWMA
National Solid Wastes
Management Association
1730 Rhode Island Ave., N.W.
Washington, DC 20036

NTMA National Terrazzo & Mosaic Assoc.
3166 Des Plaines Avenue
Des Plaines, IL 60018

NWMA National Woodwork Manufacturers Assoc.
205 W. Touhy Avenue
Park Ridge, IL 60068

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

PCI Prestressed Concrete Institute
201 North Wells Street
Chicago, IL 60606

PS Product Standard
U. S. Department of Commerce
Washington, DC 20203

RIS Redwood Inspection Service
One Lombard Street
San Francisco, CA 94111

RCSHSB
Red Cedar Shingle &
Handsplit Shake Bureau
515 116th Avenue
Bellevue, WA 98004

SDI Steel Deck Institute
P.O. Box 9506
Canton, OH 44711

SDI Steel Door Institute
712 Lakewood Center North
14600 Detroit Avenue
Cleveland, OH 44107

SIGMA Sealed Insulating Glass Manufacturers
Association
111 East Wacker Drive
Chicago, IL 60601

SJI Steel Joist Institute
1205 48th Avenue North, Suite A
Myrtle Beach, SC 29577

SMACNA
Sheet Metal & Air Conditioning
Contractors' National Association
8224 Old Court House Road
Vienna, VA 22180

SSPC Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213

TCA Tile Council of America, Inc.
Box 326
Princeton, NJ 08540

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

WCLIB West Coast Lumber Inspection Bureau
6980 S.W. Varns Road
Box 23145
Portland, OR 97223

WWPA Western Wood Products Association
1500 Yeon Building
Portland, OR 97204

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 45 00.00

QUALITY CONTROL

PART 1 - GENERAL

1.1 QUALITY ASSURANCE / CONTROL OF INSTALLATION

- A. Monitor quality control over Suppliers, Manufacturers, products, services, site conditions and workmanship, to produce work of specified quality.
- B. Comply fully 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 a minimum quality for the work except when more stringent tolerances, Codes or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- G. The OWNER, through their Authorized Representative (not the ENGINEER), may direct the order and sequence of the work. If at any time before the commencement or during the progress of the work, the materials and appliances used, or to be used, appear to OWNER's Representative as insufficient or improper for securing the quality of work required, or the required rate of progress, they may order the CONTRACTOR to increase their efficiency or improve the character of their equipment. Conform to such order. Failure of the OWNER's Representative to demand any increase of such efficiency or improvement does not release the CONTRACTOR from their obligation to secure the quality of work or the rate of progress specified.

1.2 REFERENCES

- A. Conform to reference standard current on date of Bid Opening.
- B. Obtain copies of standards when referenced by Contract Documents.
- C. Should specified Reference Standards conflict with contract documents, request clarification for ENGINEER before proceeding.
- D. The contractual relationship of the parties to the contract are not altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 50 00.00

CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain State Board Of Health approved chemical toilet(s) for the use of all workers of all trades. Place toilet(s) in an inconspicuous place, keep clean, and remove from site at the completion of the project.
- B. Do not use OWNER's facilities.

1.2 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for OWNER's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing buildings.
- C. Protect all trees, shrubs, lawns, etc., not specifically designated for removal by the ENGINEER.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.3 FENCING

- A. New fences are covered in Division 32 - Exterior Improvements.
- B. Remove existing fences which interfere with the work. Restore fences to their original condition when the work is done, unless the Contract Documents indicate otherwise.
- C. Provide adequate fencing for safety and security purposes. This is the sole responsibility of the General CONTRACTOR.

1.4 PROTECTION OF INSTALLED WORK

- A. Protect installed work and provide special protection as required.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.
- D. Protect finished floors, stairs and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or Roofing Material Manufacturer.
- F. Prohibit traffic from landscaped areas.

1.5 PARKING

- A. If the site is large enough, the OWNER will permit the CONTRACTOR to park their own and employees' vehicles on the site without charge. If the site is not large enough, the CONTRACTOR will make their own parking arrangements.
- B. Designate one (1) parking space for the OWNER and ENGINEER.

1.6 TEMPORARY FIRST AID FACILITIES

- A. Comply with the requirements of the Manual of Accident Prevention in Construction, Associated General Contractors of America, Inc., latest edition, Section 2, First Aid, and have on the site a first aid kit, dust-proof, protected from heat and moisture and containing, as a minimum, the first aid items listed according to the number of employees.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 57 00.00

TEMPORARY CONTROLS

PART 1 - GENERAL

1.1. WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.2. DUST CONTROL

- A. Execute work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.3. EROSION & SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes and drains, to control and prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. Provide erosion and sediment control practices in accordance with the Wisconsin Department of Natural Resources (DNR) Construction Site Best Management Practice Handbook.

1.4. POLLUTION CONTROL

- A. 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.

1.5. BARRICADES & WARNING DEVICES

- A. The devices, materials, and provisions specified herein are minimum requirements and do not relieve the CONTRACTOR from compliance with Federal, State, and local requirements. Prior to the placement of devices intended to close an alley, street, highway,

thoroughfare, traffic lane, or public or private way, obtain written permission from the authorized official of the municipality and, if applicable, the appropriate county or state highway official or property owner. Notify the Chiefs of the Fire and Police Departments of the municipalities concerned prior to any such closure.

- B. Erect and maintain barricades, guardrail, lights, and signs necessary for public safety and convenience. Mark hazards within the limits of the work or on detour around the work with well-painted well-maintained barricades, lanterns, torches, flares, reflectors, electric lights, flashers, or caution, warning, and directional signs in sufficient quantity and size to adequately protect life and property. Move, change, increase or remove these safeguards as required during the progress of the work to meet changing conditions.
- C. Conduct traffic control operations in accordance with the latest issues of the Manual on Uniform Traffic Control Devices (MUTCD) and the Wisconsin Department of Transportation Standard Specifications for Highway & Structure Construction.
- D. Maintain barricades in rigidly assembled condition. Keep barricades clean and the reflecting strips in good repair to be readily discernable at all times.
- E. Provide proper provisions for handling of materials for the protection of traffic and the public. Provide reasonable and satisfactory provisions for travel on sidewalks, crosswalks, streets, roads, railroads, and private ways.
- F. Comply with Occupational Safety & Health Act (OSHA) requirements issued by the Federal Government and/or adopted by the State and local laws, rules, and regulations, as they apply.
- G. The OWNER reserves the right to remedy any neglect on the part of the CONTRACTOR regarding the protection of the work and public after 24-hours' notice in writing. In case of emergency, the OWNER reserves the right to remedy any neglect without due notice, and, in either case, to deduct the cost of such remedy from any money due or to become due the CONTRACTOR.

PART 2 - PRODUCTS

Not Applicable.

PART 3 – EXECUTION

Not Applicable.

END OF SECTION

SECTION 01 77 00.00

CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.1 CLOSE-OUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected by the CONTRACTOR, and that work is complete in accordance with Contract Documents and ready for OWNER's inspection.
- B. Provide submittals to ENGINEER that are required by governing or other authorities.
- C. Submit final Application For Payment identifying total adjusted contract sum, previous payments and sum remaining due.
- D. OWNER will occupy the work, as specified in Division 1, Section 01 11 00.00 - Summary Of Work.

1.2 FINAL CLEANING

- A. Execute final cleaning prior to final review.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean or replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish and construction facilities from the site.
- H. Keep the site neat and orderly during the course of the work. Perform work to bring the site up to an acceptable standard, if found substandard by the ENGINEER, in a prompt manner.

1.3 PROJECT RECORD DOCUMENTS

- A. Maintain on-site, one (1) set of the following record documents; record actual revisions to the work:
 - 1. Contract Drawings.
 - 2. Specifications.

3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed Shop Drawings, product data and samples.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. 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.
- E. Record Documents & Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to benchmark 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.
- F. Submit documents to ENGINEER with claim for final Application For Payment.
- G. Provide acceptable Record Drawings prior to final Application For Payment.

1.4 GUARANTEES, WARRANTIES & BONDS

- A. Comprehensive information concerning guarantees, warranties and bonds is given in the General Conditions.
- B. The Specifications may state that the OWNER requires additional bonds beside those required by the General Conditions, such as a bond to be furnished with roofing may be required, etc. Such requirements will be stated in the pertinent division of the Specifications.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

DIVISION 2 - EXISTING CONDITIONS

SECTION 02 32 19.00 EXPLORATORY EXCAVATIONS

SECTION 02 32 19.00

EXPLORATORY EXCAVATIONS

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Exploratory excavations (such as test pits) and monitoring conducted by the CONTRACTOR before construction begins.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Obtain OWNER's permission to perform exploratory excavations.
- B. Perform site exploratory excavations to determine site soil conditions.

3.2 RESTORATION

- A. Restore any exploratory excavation area to pre-excavation condition.

END OF SECTION

DIVISION 31 – EARTHWORK

- SECTION 31 10 00.00 SITE CLEARING
- SECTION 31 20 00.00 EARTH WORK
- SECTION 31 25 00.00 EROSION AND SEDIMENT CONTROLS

SECTION 31 10 00.00

SITE CLEARING

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Methods for clearing the site and, disposal of materials cleared from the site.

1.2. MEASUREMENT PROCEDURES

- A. Measure in the units specified in the Contract Bid Forms, if applicable.

1.3. PAYMENT PROCEDURES

- A. Pay as specified in the Contract Bid Forms, if applicable.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1. CONSTRUCTION

A. Methods

1. Remove obstructions such as mounds of dirt, stone or debris.
2. Remove and replace obstructions such as street signs, small culverts and end walls, advertising signs and guard posts, located in construction easements or right-of-ways.
3. Preserve and protect trees or shrubs from damage or injury. Do not remove or trim trees or shrubs unless specifically allowed in the Contract Documents. Cut interfering tree roots 1-inch or greater in diameter perpendicular to the direction of growth on the tree side of the trench. Treat cut roots with a tree wound dressing.
4. Provide access to private and public property at all times. Notify property owners of specific access arrangements during construction.

B. Disposal

1. Dispose of the material in conformance with all laws, ordinances and regulations governing the disposal of such materials and items.

2. Burning
 - a. Burn only if permitted by OWNER.
 - b. Burn in accordance with laws, ordinances, and regulations regarding burning.
 - c. Burn in a manner that will not injure or endanger items to be preserved or left in place.
 - d. Burn in a manner as to prevent the fire from spreading to areas adjoining the right-of-way.
 - e. If clearing and grubbing is completed in times when burning is not permitted, pile all material to be burned outside the clearing and grubbing limits and return such material to the construction site and burn it at a time when burning is permitted.
3. Obtain written permission to place material on private property or on land not associated with the project from the property owner or other responsible party. Include language absolving the ENGINEER and the OWNER from any and all responsibility in connection with the placing of material on said property. Provide copy of written permission to the ENGINEER upon request.

C. Conservation

1. Prevent injury to trees, shrubs, vines, plants, grasses and other vegetation growing on areas outside of the areas to be cleared and grubbed. Confine the dragging, piling and burning of debris, the piling of material of various kinds, and the performing of other work which may be injurious to vegetation to areas which carry no vegetation or which will be covered by embankments or disturbed by excavation.
2. Remove low-hanging or unsound branches as required from trees and shrubs that are to remain in place.
3. Remove shrubbery, brush, trees and other vegetation from areas outside of the areas to be cleared and grubbed, when removal is required by the Contract Documents. Remove dead vegetation, logs, stumps, limbs, sticks and other undesirable matter occurring on areas where live shrubbery, brush, trees and other desirable vegetation are to be left in place.
4. Backfill stump holes and other holes from removed obstructions with suitable material and compact in accordance with the requirements for compaction control and testing except in areas to be excavated
5. Comply with all applicable laws and ordinances and air pollution control rules.

D. Lot Corners

1. Protect all survey corners in project area. Replace any damaged or removed corners using a registered land surveyor.
2. CONTRACTOR may request ENGINEER to locate and mark these corners prior to commencing work at CONTRACTOR's expense.

END OF SECTION

SECTION 31 20 00.00

EARTHWORK

PART 1 - GENERAL

1.1. SUMMARY

A. Section Includes

1. Acceptable methods for the excavating, placing, grading, stabilizing and compacting of earth at the project site.

B. Measurement Procedures

1. Roadway Excavation (Common Excavation, Rock Excavation, & Marsh Excavation)
 - a. Measure common excavation in cubic yards in their original position, computed by the method of average end areas.
 - b. Measure rock excavation using vertical measurements for determining end areas within the limits of the roadbed (defined as the shoulder slopes or 1 foot behind the back of curb) extending from the surface of the rock to an elevation 6-inches below the sub-grade or finished surface of the earth grade. Measure boulders and surface stone of one half ($\frac{1}{2}$) cubic yard or more in volume individually and the volume computed from average dimensions taken in three (3) directions.
 - c. Measure marsh excavation in its original position by the average end area method to the extent that a reasonably well defined trench of required cross section is excavated and formed, having relatively stable side slopes and the bottom of which is the bottom of the marsh or satisfactory support for the backfill and embankment.

C. Payment Procedures

1. Pay for earthwork by cubic yard unless otherwise specified in the Contract Documents.
2. Pay for Excavation Below Subgrade (EBS) (undercutting) at the contract unit price for excavation unless otherwise specified in the Contract Documents.

1.2. REFERENCES

- A. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³)
- B. ASTM D8167 – Standard Test Method for In-Place Bulk Density of Soil and Soil-Aggregate by a Low-Activity Nuclear Method (Shallow Depth)

1.3. SUBMITTALS

- A. Furnish OWNER with the proposed source or sources of embankment material to be used at least fifteen (15) working days prior to delivery.
- B. Obtain soil samples from the intended embankment material source. Perform a soil analysis through a soil testing laboratory to ensure conformity with the specifications.
- C. Do not deliver embankment material to the work site prior to review by the OWNER. Any delay caused by the failure of soil tests to meet these specifications is the sole responsibility of the CONTRACTOR.

PART 2 – PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1. PROTECTION OF EXISTING STRUCTURES & UTILITIES

- A. Protect against damage surfaces and features, including buildings, pavements, trees and shrubs, within and adjacent to the construction easement or right-of-way, which are to be saved as indicated on the drawings or by the ENGINEER.
- B. Support and protect existing gas pipes, water pipes, steam pipes, electric and telephone facilities, and other surface or subsurface structures, either of a private or of public ownership, whether or not indicated or shown on the drawings. Perform such work at CONTRACTOR's expense, and according to their own drawings.
- C. Contact public utilities for the location of their underground structures such as ducts, mains or services for electric power, gas and telephone. Support above ground poles for electric power, lighting and telephone wires and cables. If the CONTRACTOR damages such utilities or subsurface structures, make settlement with the OWNER(s) of the utility (ies).

3.2. INTERFERENCE OF UNDERGROUND STRUCTURES

- A. Notify ENGINEER and OWNER when an unknown underground structure is encountered in the trench or tunnel and because of interference part or all of the structure requires relocation.
- B. Notify the ENGINEER and the OWNER of underground structure of CONTRACTOR'S desire to temporarily relocate such structure or to discontinue the service therein, and receive from the OWNER of such underground structure permission for such relocation or discontinuance of service if the relocation is to be made for CONTRACTOR's convenience. Replace structure to original position and condition. Structure OWNER may perform the work in connection with said relocation, discontinuance or replacement at the CONTRACTOR's expense. No extra compensation will be paid for unavoidable delays caused by the interference of existing underground structures.

- C. Protect, support, or brace existing underground structures where the excavation of either a trench or tunnel extends under or approaches it.

3.3. WASTE OR EXCESS MATERIAL DISPOSAL

A. Surplus Earth

1. Surplus earth is the CONTRACTOR's property.
2. Haul surplus material to CONTRACTOR procured dump site.

3.4. SITE GRADING

A. Stripping Topsoil

1. Prior to excavation, strip topsoil, if any, to its entire depth.
2. Strip vegetation from stockpiling area.
3. Stripped topsoil.
 - a. Free from clay, stones, excessive vegetation, and debris.
 - b. May be used for finished grading.

B. Rough Grading

1. Grade to elevations 4-inches below finished grade for all areas not under proposed walks, paved areas and drives. Grade to finished sub-grade under walks, paved areas and drives.
2. Install sewers, water mains and other utilities prior to rough grading. If fill or backfill settles after grading, ENGINEER may direct that these areas be filled to finish grade.
3. Rough grade to a reasonably smooth, compacted and free from irregular surface changes condition.

C. Finish Grading

1. Where existing grades of lawns or planted areas are not to be changed, or if new grades are less than 4-inches above existing grade, remove enough of the material in place to allow placing of 4-inches of new topsoil, unless existing topsoil to required depth is undisturbed and of equal or greater depth and quality than new topsoil. If the existing topsoil is left in place, place only enough new topsoil to bring the project up to grade. Scarify sub-grade to a depth of 1-inch to assure bonding of topsoil to subsoil.

2. Stockpiled topsoil.
 - a. Free of stones, tree roots, branches, clay balls, hard lumps, gravel, cinders and other undesirable materials.
3. Grade, rake and roll with a roller weighing not more than 100 nor less than 25 pounds per lineal foot. Do not place topsoil in frozen or muddy conditions.
4. Excess topsoil, if any, is the OWNER's property. Leave stockpiled on site.

3.5. STRUCTURE EXCAVATION, BACKFILLING & COMPACTION

A. General

1. Section includes the acceptable methods of excavating, backfilling and compacting of earth beneath the building structure to a point 5 feet outside the building lines.
2. Submit the following reports from a certified geotechnical testing laboratory directly to the ENGINEER and copy the CONTRACTOR:
 - a. Analysis of soil materials, whether procured on or off site, and including fill, backfill and borrow materials.
 - b. Verification of each footing sub-grade.
 - c. Comprehensive strength of bearing test reports.
 - d. Compaction test reports.
3. Site Utilities
 - a. Advise utility companies of excavation activities before starting excavations. Locate and identify underground utilities passing through work area before starting work.
 - b. If underground utilities are encountered in location other than indicated, immediately advise Utility Company before proceeding. Amend project record documents to show actual utility locations.
 - c. Protect existing utilities, unless it is being removed.
 - d. Do not interrupt existing utilities without advance notice to and written approvals from the OWNER.

B. Materials

1. General
 - a. For each soil material proposed for use as fill or backfill, whether obtained on or off site, classify soil material, develop Proctor curve and perform any other tests required.

- b. Obtain approval for each soil material.
- 2. Structural Fill: Predominantly sand material with 100% passing the 3-inch sieve, 70 to 100% passing the #4 sieve and less than 15% passing the #200 sieve.
- 3. Native Fill: On site soils approved by Geotechnical Engineer. The moisture contents should be within +/- 3% of the optimum modified proctor moisture content.
- 4. Office Slab Base Course: 6-inch of manufactured sand or ¾-inch crushed limestone.

C. Excavation

1. General

- a. Includes the removal of any material necessary to achieve the required elevations and dimensions of the structures indicated on the drawings. It also includes trenching for utility systems to a point 5 feet beyond the building lines.
- b. Extend excavations beyond concrete foundations to allow proper inspections of concrete form work and materials.
- c. Strip existing topsoil and soft/wet soils from the entire construction area.
- d. Protect the bottom of excavation from frost at all times.
- e. No payment will be made for correction of sub-grades improperly protected against damage from freeze-thaw, water accumulation or rutting.

2. Approval of Sub-Grade & Additional Excavation

- a. Provide certified Geotechnical Engineering Representative to verify soil bearing pressures of sub-grade. At the direction of the Geotechnical Engineering Representative, remove unsatisfactory soils to an elevation where satisfactory soil is encountered.
- b. Where additional excavation is made below slabs-on-grade, restore the proper elevation with compacted structural fill.
- c. Where additional excavation is made below footings, restore the proper elevation with compacted structural fill over an area equal to the footing size plus the depth of the additional excavation on each side of the footing.

3. Unnecessary Excavation

- a. Do not excavate below the elevations indicated on the drawings, unless so directed by the ENGINEER or the On-Site Geotechnical Engineering Representative.
- b. Restore unapproved excavations to the proper elevation with compacted select fill at no expense to the OWNER.

D. Backfill & Fill

1. Backfill

- a. Material: Structural Fill.
- b. Location
 - 1) Unsatisfactory Soils - Over-excavation of unsatisfactory soils below footings.
 - 2) Foundation Walls - Both sides of interior and exterior walls.
 - 3) Retaining Walls - Both sides.
 - 4) Footings - Above and adjacent to all footings located below slabs or pavement.
 - 5) Pipe Trenches - Above all pipe bedding.
- c. After completion of below grade construction and prior to any backfilling, remove all form materials, trash and debris from the excavation.
- d. Place backfill in horizontal layers not more than 8-inches in thickness, loose measurement.
- e. Compact each layer by hand or machine to the required density.
- f. Backfill simultaneously on both sides of foundation walls such that the level of backfill is equal on each side of the foundation wall at all times.
- g. Where backfill occurs on one side of a foundation wall, or where final grade is unequal, backfill when floor framing is complete in the case of basement walls or when final concrete strength is reached in the case of retaining walls. Take special care when backfilling to prevent any wedging action or eccentric loading against the wall. Exercise care that equipment used in compaction of backfill does not overload the walls. Hand compact backfill immediately adjacent to such walls.
- h. Place backfill to the required sub-grade to allow for placement of topsoil or concrete slabs.

2. Fill

- a. Material: Native Fill.

- b. Location: Where fill is required to raise the grade level of the site.
- c. Install fill in horizontal layers not more than 8-inches in thickness, loose measurement.
- d. Compact each layer by hand or machine to the required density.
- e. Review sub-grade prior to filling operations, as follows:
 - 1) After stripping topsoil, proof roll the building area with a fully loaded tandem axle dump truck or rubber tired vehicle of similar size and weight.
 - 2) Undercut soils that are observed to rut or deflect excessively under the moving load and replace with compacted fill.
 - 3) Verify the proof-rolling and undercutting activities with a qualified representative of a Geotechnical Engineer. Perform these activities during a period of dry weather.
 - 4) Scarify and compact the sub-grade soils to at least 95% modified Proctor for a depth of 6-inches below the surface. Adjust the moisture content of the sub-grade soils as required to facilitate compaction.
- 3. Slab Sub-base: Provide slab base course below all interior floor slabs and exterior walks. Compact slab base course as specified in the compaction requirements.

E. Compaction Requirements & Testing

- 1. Equipment: Provide all necessary compaction equipment and other grading equipment to obtain the required compaction.
- 2. Testing
 - a. Determine maximum and minimum density of the fill soil in accordance with ASTM test designation D-1557, Modified Effort Test. Determine relative density in accordance with ASTM test designation D-8167.
 - b. Submit 50-lb. representative samples of the proposed fill material to an independent laboratory for particle size analysis and optimum moisture-maximum density determinations prior to the start of any filling operations.
 - c. Perform field density tests for determining the compaction of the fill using a qualified testing laboratory in accordance with standard recognized procedures for making such tests. Perform these tests at locations requested by the ENGINEER. Retest failing areas at no additional cost to the OWNER.

3. Compaction Requirements

- a. Compact backfill, fill and slab sub-base to 95% modified Proctor maximum dry density per ASTM D-1557.
- b. Provide one compaction test for every 50 cubic yards to fill.

3.6. ROADWAY EXCAVATION, EMBANKMENT, BACKFILL & COMPACTION

A. General

- 1. Consists of the excavation and satisfactory disposal of all materials taken for the construction of the roadway, roadbed, embankments, earth sub-grade and shoulders, intersections, side ditches and dikes, channels and waterways. It also includes the grading of entrances, approaches, parking lots, ditches and channels beyond the right-of-way. Includes the removal and satisfactory disposal of surface and base courses, embankment surcharge, masonry walls, foundations of buildings or other structures that lie within the right-of-way, stone fences, stone piles and surplus and unsuitable materials; the replacement of unsuitable material with satisfactory material; the trimming and finishing of the roadway; and maintaining such work in a finished condition until acceptance.
- 2. Does not include excavation for structures or other excavation items for which separate and specific methods of measurement and basis of payment are provided elsewhere in the specifications and contract.

B. Classification of Excavation

1. Rock Excavation

- a. Includes:
 - 1) Hard, solid rock in ledges, bedded deposits and un-stratified masses and conglomerate deposits or any other material so firmly cemented they present the characteristics of solid rock; and the ENGINEER determines it is not practical to excavate and remove same without blasting or using rippers.
 - 2) Rock boulders having a volume of one cubic yard or more.
- b. Does not include crushed aggregate or asphaltic base or surface courses or concrete base or surface courses.

2. Marsh Excavation

- a. Includes:
 - 1) Excavation below the original ground level of marshes and swamps underlying proposed embankments, within the limits indicated on the drawings or as determined by the ENGINEER, and necessary or desirable to ensure a stable foundation for

embankment or to accelerate the subsidence of unstable material under embankment load.

- b. Does not include old road cores so designated on the drawings to be salvaged and used in the construction of embankments.

3. Common Excavation

- a. Includes materials encountered in the performance of the work under roadway excavation other than specific materials that have been classified rock excavation or marsh excavation.

C. Construction

1. General

- a. Clear and grub and remove topsoil before ground is broken or embankments are placed.
- b. Excavate materials from within the right-of-way. Use excavated material with suitable engineering properties in the work to the extent practicable. Dispose of surplus or unsuitable materials off the project site.
- c. Grade entrances, approaches, ditches, and channels beyond the right-of-way.
- d. Replace unsuitable material with satisfactory material. Trim and finish the roadway. Maintain the work in a finished condition until acceptance.

2. Preparing Roadway Foundation

- a. Remove vegetation taller than one foot before excavating or placing embankment. Remove sod, perishable material, unstable topsoil, muck, peat, and other undesirable material from the roadway foundation. Also remove frozen material unless the OWNER approves otherwise. Dispose of removed materials off the project site.
- b. Salvage topsoil from excavation areas and the roadway foundation. Remove excess unstable topsoil from the roadway foundation as Excavation Below Subgrade (EBS).
- c. Compact the existing ground within the roadway foundation as necessary to support the embankment and attain the specified embankment density.
- d. If placing embankment on side slopes 10 feet high or higher and steeper than one vertical to three horizontal, provide vertically faced horizontal steps or benches in the slopes to support the embankment. Cut or form the steps or benches while placing the embankment.
- e. Completely remove pavement, asphaltic surface, and rigid base from within the roadbed slopes and underlying proposed embankments to a

minimum depth of 2 feet below the finished grade line or to the depth shown on the plans.

3. Drainage During Construction

- a. Maintain the roadway, ditches and channels in a well-drained condition at all times by keeping the excavation areas and embankments sloped to the approximate section of the ultimate earth grade. Provide temporary drainage until permanent drainage work is completed. Temporary drainage installations are incidental to the construction of the work.
- b. If storing salvaged topsoil on the right-of-way during construction, stockpile it to preclude interference with or obstruction of surface drainage.
- c. Preserve, protect, and maintain existing tile drains, sewer, and other subsurface drains that should continue in service without change. Repair any damage to these facilities resulting from negligence or carelessness of the CONTRACTOR's operations.

4. Excavation Below Subgrade (EBS)

- a. Remove deposits of frost-heave material, unstable silty soils, wet and unstable soil, material salvage from old road cores in marshes, topsoil containing considerable humus or vegetable matter, rocks, or other undesirable foundation material. If possible, slope and drainage to excavation bottoms to prevent water accumulation.
- b. Dispose of humus bearing soils and other excavated materials not suitable for embankment construction.
- c. Use selected materials from roadway and drainage excavation having suitable engineering properties, borrow, or granular backfill to backfill excavated areas.

5. Grading the Roadway, Intersections, and Entrances

- a. Utilize suitable material removed from excavation in the construction of the roadway, as far as practicable. Use excess excavated material in other places as shown on the drawings.
- b. Undercut or underfill excavated slopes or areas and embankment slopes or areas, designated to be covered with topsoil or salvaged topsoil, to the necessary depth to provide for the specified amount of topsoil or salvaged topsoil to be placed.
- c. Perform excavation to avoid removing or loosening any material outside the required slopes. Replace and thoroughly compact any material removed or loosened to the required cross-section.

- d. Grade intersection roads, approaches, entrances, and driveways. Construct intersections and private entrances, trim shoulder and slopes, finish and blade the earth subgrade, and complete the ditches closely following the rough grading.

6. Constructing Ditches, Dikes, and Channels

- a. Construct inlets, outlets, swamp, berm and intercepting ditches, dikes or intercepting embankments and channels as shown on the drawings or as directed by the ENGINEER and maintain to the required section until acceptance. Perform in proper sequence with other work to provide adequate drainage and to minimize erosion and siltation.
- b. Excavate suitable material from ditches and channels and use in the construction of the roadway and backfilling of abandoned ditches and channels. Dispose of unused excavated material off the project site.
- c. Do not place waste or surplus excavation within 3 feet from the edge of the ditch or channel or within such greater distance, as may be required, to ensure stability of the side slopes. Spread waste or surplus material in thin uniform layers neatly leveled and shaped. Remove roots, stumps, logs and other objectionable material in the slopes and bottoms of ditches and channels. Backfill the holes with suitable material. If necessary, provide sufficient opening in spoil banks to allow surface drainage of adjacent lands.
- d. Provide suitable outlets or flumes from intercepting ditches to roadway ditches where necessary.

7. Muck or Peat Marshes

- a. Complete treatment as soon as practicable in order to obtain maximum settlement prior to proposed base and surface construction.
- b. Excavate wet marshes having relatively unstable side slopes beginning at one end and proceed in one direction to the full width across the entire marsh immediately ahead of backfilling.
- c. Excavate and backfill to provide the complete removal or displacement of all peat or muck from within lateral limits called for on the drawings or as staked by the ENGINEER, and to the bottom of the marsh or to firm support.
- d. Excavate any displaced peat or muck accumulating ahead of the advancing embankment toe to provide removal of or to facilitate displacement of underlying peat or muck.

D. Backfill & Embankments

- 1. Roadway backfill consists of placing in embankments and in miscellaneous backfills material obtained from roadway excavation or borrow excavation.

2. Materials for Embankment
 - a. Suitable materials containing no logs, stumps, brush or other perishable material.
 - b. No frozen lumps of soil are allowed.
 - c. The top 12-inches of earth embankments are free from stone, broken concrete or other materials that would significantly affect scarifying, compacting and finishing the sub-grade.
3. Remove ice and snow from the ground surface before placing embankment on the ground. Do not place embankment on frozen subgrade. Unless the Contract specifies otherwise, discontinue constructing embankments in the fall or early winter if weather conditions prevail that cause substantial freezing of the materials during placement, except if using materials from rock excavation, or of a granular nature and that contain only minor quantities of silt, clay, loam, or similar materials.
4. Construct embankment starting at the lowest point of the fill, below the grade at the bottom of ravines. Construct the embankment in layers by spreading and leveling the material during placement. Spread individual layers evenly to uniform thickness throughout and approximately parallel with the finished grade for the full width of the embankment, unless directed otherwise. Place the material in layers generally no thicker than 8-inches, to secure the required compaction. On side hills too steep to operate hauling equipment, over low wet ground, in marshes, or if filling in water, provide a single layer, just thick enough to support the hauling equipment while placing subsequent layers.
5. If the material for embankment consists of rock, broken stone, or fragmented material of a size that makes placing in 8-inch layers impracticable, then place the embankment material in layers no thicker than the approximate average size of the larger rocks. Avoid nesting and fill the voids with smaller stones and satisfactory soil or rock fines.
6. Do not compact embankment material if the moisture content causes excessive rutting by the hauling equipment, or excessive displacement or distortion under the compacting equipment. If these conditions exist, allow the materials to dry before compacting. If necessary, accelerate drying the materials by aerating or by using blade graders, harrows, discs, or other appropriate equipment to manipulate the material. If the embankment material does not contain sufficient moisture to compact properly, add water in quantities the ENGINEER deems necessary to aid, accelerate, and secure effective compaction. Compact embankments, outside the roadway foundation, to the degree contemplated for standard compaction. The ENGINEER may allow less compaction outside the roadway foundation if the CONTRACTOR uses unstable soil.
7. Deposit, spread, and level, as specified above, the embankment material in layers generally no thicker than 8-inches before compaction. Compact each layer of the embankment until the compaction equipment achieves no further significant

consolidation. Provide the required compaction for each layer before placing any material for a succeeding layer. Route hauling and leveling equipment over the entire area of each layer or fill to compact to the extent practicable during placement. The ENGINEER may require specialized compaction equipment to provide additional compaction if, in the ENGINEER's opinion, adequate compaction is not achieved without it. Specialized compaction equipment includes pad foot rollers, pneumatic-tire rollers, vibratory rollers, or other alternate compaction equipment that produces the required results. Obtain the ENGINEER's approval before using alternate compaction equipment.

E. Compaction

1. Compact in accordance with the requirements for standard compaction unless special compaction is called for on the drawings or in the Contract. Do not compact embankment material when the moisture content is such as to cause excessive rutting by the hauling equipment or excessive displacement or distortion under the compacting equipment. Allow materials to dry prior to compacting. Add water to embankment materials with insufficient moisture content.
2. Roadway Excavation Backfill and Embankment
 - a. Compaction requirements are listed in Table 31 20 00.00-1, located at the end of this Section.
 - b. Perform the number of compaction tests specified in the Special Provisions, if applicable.
 - c. Perform proof roll test prior to placement of aggregate base.
3. Crushed Stone Paving
 - a. Compact crushed stone or aggregate base course to 95% of maximum density in accordance with the requirements of ASTM D 1557, Modified Proctor Test.
 - b. Perform the number of compaction tests specified in the Special Provisions, if applicable.
 - c. Perform proof roll test with loaded tandem axle truck prior to project acceptance. All soft areas shall be removed and reconstructed.

F. Tolerances

1. Grade final subgrade and ditches within 0.08 feet of plan elevations.

END OF SECTION

TABLE 31 20 00.00-1

Excavated Area	Percent Compaction Fine-Grained Soil	Percent Compaction Coarse- Grained Soil	Relative Density *
Within 10' of building lines under footings, floor slabs and structures attached to buildings (i.e., walls, stoops, steps); and the upper 4' or a distance twice the trench width, whichever is greater, of any trench located under any concrete or asphalt paved surfaces.	90%	95%	70%
10' beyond building lines under walks, driveways, curbing, concrete or asphalt paving; sub-grade preparation; and the remaining section of any trench located under these paved surfaces.	80%	90%	60%
10' beyond building lines under seeded, sodded and landscaped areas, and any trench located under these areas.	80%	90%	--

Coarse-grained soils are classified as those soils with more than 50% (by weight) larger than the No. 200 mesh sieve and with a plastic index less than 4.

Compaction requirements maximum density shall be determined by AASHTO Designation T99, Method C (Standard Proctor), with replacement of the fraction of material retained in the 3/4-inch sieve with No. 4 to 3/4-inch material.

* Minimum relative density requirements apply to coarse-grained soils and apply only in cases where the percentage compaction requirements are not being reached.

SECTION 31 25 00.00

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Erosion and sedimentation controls for earthwork operations.

1.2. MEASUREMENT PROCEDURES

- A. Measure in the units specified in the Contract Bid Forms.

1.3. PAYMENT PROCEDURES

- A. Pay as specified in the Contract Bid Forms.

1.4. REFERENCES

- A. Construction Site Erosion & Sediment Control Standards (Conservation Practice Standards) – Wisconsin Department of Natural Resources

1.5. SUBMITTALS

- A. Submit the following to the ENGINEER a minimum of 10-days prior to incorporation into the project:
 - 1. Manufacturer's data on erosion control material and devices.
 - 2. Erosion control plan.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Erosion Control
 - 1. Acceptable Materials
 - a. On Wisconsin Department of Transportation (WisDOT) Erosion Control Product Acceptability List (PAL)

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. Erosion Control

1. Perform erosion control measures to control water pollution, erosion and siltation through the use of intercepting embankments, berms, dikes, dams, silt fences, settling basins, slope paving, ditch checks, rip-rap, mulches, erosion mats, seeding, sodding, plantings and other erosion control devices or methods.
2. Coordinate temporary erosion control measures with permanent erosion control measures to assure economical, effective and continuous erosion control.
3. Submit a detailed plan and schedule of construction operations for accomplishing temporary and permanent erosion control work relating to grubbing, grading, excavation, paving and other work which might create erosion.
4. Minimize the area of erosive land exposed to the elements, and minimize the duration of such exposure.
5. Perform construction in and adjacent to rivers, streams, lakes or other waterways in such a manner as to avoid washing, sloughing or deposition of materials into waterways which would result in undue or avoidable contamination, pollution or siltation of such waterways.
6. Perform grubbing and grading operations in proper sequence with other work to minimize erosion. Construct intercepting ditches or dikes, as soon as practical, after clearing and grubbing operations are completed.
7. Furnish, install, maintain and remove erosion and sediment control facilities in accordance with Wisconsin Department of Natural Resources Technical Standards.
8. Install and maintain erosion control (Best Management Practices) in accordance with applicable permits.
9. Inspect site weekly and within 24-hours following a rainfall of 0.5-inches (in 24-hours) or greater. Prepare and retain inspection forms.

END OF SECTION

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 01 00.00 PAVEMENT REPAIR & RESURFACING

SECTION 32 11 23.00 AGGREGATE BASE COURSES

SECTION 32 92 00.00 LANDSCAPING

SECTION 32 01 00.00

PAVEMENT REPAIR & RESURFACING

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Material requirements, construction procedures, and testing procedures.

1.2. MEASUREMENT PROCEDURES

- A. Asphaltic Concrete Paving, Concrete Pavement, Concrete Sidewalk & Driveways

- 1. Measured by the square yard, unless otherwise specified in the Contract Documents.

- B. Concrete Curb & Gutter

- 1. Measured by the lineal foot, unless otherwise specified in the Contract Documents.

1.3. PAYMENT PROCEDURES

- A. Asphaltic Concrete Paving

- 1. Pay for asphaltic concrete paving by the square yard, unless specified otherwise in the Contract Documents.

- 2. Price includes:

- a. Furnishing, placing, and protecting all materials incorporated into the work.
- b. Saw cutting, preparation of the foundation including base aggregate, adjusting fixtures, testing, and required submittals.

- B. Concrete Pavement and Concrete Sidewalks & Driveways

- 1. Pay for concrete pavement and concrete sidewalks & driveways by the square yard, unless specified otherwise in the Contract Documents.

- 2. Price includes:

- a. Furnishing, installing, curing, and protecting all materials incorporated into the work.
- b. Saw cutting, jointing, sealing joints, reinforcement, preparation of the foundation including base aggregate, adjusting fixtures, testing, and required submittals.

c. Tie Bars

- 1) If a Bid Item exists, pay for tie bars according to the Specifications.
- 2) If no Bid Item exists, tie bars are considered part of the concrete pavement. No additional compensation will be provided.

C. Concrete Curb & Gutter

1. Pay for concrete curb & gutter by the lineal foot, unless specified otherwise in the Contract Documents.
2. Price includes:
 - a. Furnishing, installing, curing, and protecting all materials incorporated into the work.
 - b. Saw cutting, jointing, sealing joints, reinforcement, preparation of the foundation including base aggregate, adjusting fixtures, testing, and required submittals.
3. Tie Bars
 - a. If a Bid Item exists, pay for tie bars according to the Specifications.
 - b. If no Bid Item exists, tie bars are considered part of the concrete curb & gutter. No additional compensation will be provided.

D. Delays in Replacement

1. The OWNER will preform repairs or replacements if the CONTRACTOR is negligent in completing the repairs in a reasonable time. The OWNER may deduct the cost for such work from the monies due the CONTRACTOR.

E. Contractor's Convenience

1. Additional replacements performed by the CONTRACTOR for their convenience will not be measured and paid under the repair unit prices.

1.4. REGULATORY REQUIREMENTS

- A. Contact State, County, and Local Highway Departments before preparing the bid to determine their requirements.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Meet requirements of Section 31 20 00.00 Earth Work

- B. Meet requirements of Section 32 11 23.00 Aggregate Base Courses.
- C. Meet requirements of Section 32 12 16.00 Asphalt Paving.
- D. Meet requirements of Section 32 13 13.00 Concrete Pavements.
- E. Meet requirements of Section 32 16 13.00 Concrete Curb & Gutter.
- F. Meet requirements of Section 32 16 23.00 Concrete Sidewalk and Driveways.

PART 3 - EXECUTION

3.1. PROTECTION

- A. Install and maintain barricades, guard rails, signs, and warning devices to provide traffic control during the construction period and during repairs to gravel and paved areas. Provide dust control during this same period, seeing that the areas are oiled, watered, or treated with calcium chloride.

3.2. SURFACE PREPARATION

- A. Remove the materials being placed to the depth required for the pavement specified. Sawcut the adjoining pavement edges using straight, full depth cuts to provide neatly trimmed edges clean of any shattered or split material. Remove any spalled concrete with a light hammer.

3.3. REPAIR/RESTORATION

A. Utility Trenches

- 1. Place and compact backfill material in accordance with the requirement of Section 33 05 05 – Buried Piping Installation and/or Section 31 20 00.00 – Earth Work.

B. Gravel Surfaces

- 1. Replace gravel roadway or walkway surface with a cross section conforming to the adjacent base course or a minimum of 12-inches of Base Aggregate in accordance with Section 32 11 23.00 – Aggregate Base Courses.

C. Asphalt Pavement & Asphalt Driveways

- 1. Replace asphalt pavement, driveway, and trail to the same thickness as adjoining pavement. Place a minimum thickness of 3-inches asphalt pavement over a 12-inch aggregate base.
- 2. Place asphalt with a paving machine if the pavement replacement width exceeds 4 feet.

3. Perform work in accordance with the requirements of Section 32 12 16.00 - Asphaltic Concrete Paving.

D. Concrete Pavements

1. Provide an aggregate base a minimum of 6-inches thick.
2. Replace concrete pavement to the same thickness as the adjoining slab. Provide a minimum thickness of 6-inches.
3. Saw pavement using a diamond saw to make straight, full depth cuts without causing further cracking of the surrounding pavement. Remove the spalled concrete with a light hammer.
4. Install tie bars to connect the replaced concrete pavement with adjacent existing concrete pavement. Drill tie bars and install number 6x18-inch deformed bars spaced at 3 feet on longitudinal joints and 1 foot on transverse joints.
5. Perform work in accordance with the requirements of Section 32 13 13.00 - Concrete Pavements.

E. Concrete Surfaces

1. Concrete Curb & Gutter

- a. Replace curb and gutter with curb and gutter having a cross section conforming to the adjacent curbing. Perform work in accordance with the requirements of Section 32 16 13.00 - Concrete Curb & Gutter.
- b. Install tie bars to connect the replace curb & gutter with adjacent existing curb & gutter. Drill 2 number 4x18-inch epoxy coated tie bars at 1 foot spacing.
- c. In areas adjacent to existing concrete pavement, install tie bars to connect the replaced concrete curb & gutter with adjacent existing concrete pavement. Drill number 4x24-inch epoxy coated tie bars at 3 foot spacing.

2. Sidewalks & Driveways

- a. Replace sidewalks and driveways with the same thickness and width to conform to adjacent walks and driveways. Perform work in accordance with the requirements of Section 32 16 23.00 - Concrete Sidewalk & Driveways.
- b. Where concrete driveway replacement is adjacent to existing concrete driveway, drill and install epoxy coated #4 tie bars (12-inches long) into existing concrete driveway. Imbed tie bars a minimum of 6-inches into existing driveway. Provide a maximum spacing of 3 feet between tie bars.

3.4. TEMPORARY RESURFACING & MAINTENANCE

- A. If site conditions (such as cold weather) preclude placing the permanent pavement replacement, the OWNER may instruct the CONTRACTOR to place temporary asphalt cold mix patches in open excavation or place asphalt around manhole castings to prevent damage by snow plows.
- B. The OWNER may deduct the cost for any maintenance or emergency repair work provided by the OWNER in areas that have not yet been paved from the monies due the CONTRACTOR.

3.5. REQUIREMENTS BY OTHERS

- A. Repair streets, highways, alleys, highway shoulders, ditches or other surfaces that occur on County or State Highways or property in accordance with the County or State Highway Departments. Acquire County or State Highway Department approval before the work will be accepted by the OWNER. When special backfill is required by the County or State Highway Departments, include the cost of hauling away the surplus material removed from the trench and the cost of furnishing, hauling, and placing special backfill in the unit price bid for the items in which such backfill is required.

END OF SECTION

SECTION 32 11 23.00

AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1. SUMMARY

A. Section Includes

1. Material requirements, submittals, breaker run stone, testing and placement procedures.

B. Measurement Procedures

1. Measured by the ton, unless specified otherwise in the Contract Documents.
2. For weighed aggregate with a moisture content greater than 7% the ENGINEER shall reduce the ticket weight by the weight of water exceeding 7%.

C. Payment Procedures

1. Paid by the ton, unless specified otherwise in the Contract Documents.

1.2. REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO)

1. T 2 – Standard Method of Test for Sampling of Aggregates
2. T 11 – Standard Method of Test for Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
3. T 27 – Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
4. T 30 – Standard Method of Test for Mechanical Analysis of Extracted Aggregate
5. T 89 – Standard Method of Test for Determining the Liquid Limit of Soils
6. T 90 – Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils
7. T 96 – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
8. T 99 – Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop
9. T 103 – Standard Method of Test for Soundness of Aggregates by Freezing and Thawing

10. T 104 – Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
11. T 113 – Standard Method of Test for Lightweight Particles in Aggregate
12. T 180 – Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
13. T 191 – Standard Method of Test for Density of Soil In-Place by the Sand-Cone Method
14. T 255 – Standard Method of Test for Total Evaporable Moisture Content of Aggregate by Drying

B. American Society for Testing and Materials (ASTM)

1. D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³)
2. D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

1.3. SUBMITTALS

A. Samples

1. When requested by the OWNER, submit a representative sample of the aggregate incorporated into the work to a certified testing laboratory to determine the moisture content.

B. Quality Assurance / Control Submittals

1. Submit the following a minimum of 10-days prior to commencement of construction for Base Aggregate Dense and Base Aggregate Open Graded:
 - a. Test results from an OWNER approved independent certified testing laboratory indicating that any aggregate material incorporated into the work complies with these Contract Specifications. Perform the following tests:
 - 1) Gradation
 - 2) Fracture
 - a) 58% for Dense
 - b) 90% for Open-Graded
 - 3) Liquid Limit
 - a) <=25

- 4) Plasticity
 - a) ≤ 6
- b. When requested by the OWNER, submit a representative sample of the aggregate to a certified testing laboratory to determine the moisture content.

PART 2 - PRODUCTS

2.1. MATERIALS

A. Dense-Graded Base

1. General

- a. Provide base aggregates from an ENGINEER-approved source.
- b. Recycled material may be used for base course if specified in the Contract or approved by the ENGINEER.
- c. Lime sludge obtained from the waste product of the paper manufacturing process is not acceptable.

2. Gradation

- a. Except for reclaimed asphaltic pavement, conform to the following gradation requirements:

Sieve Size	Percent Passing By Weight		
	3-Inch	1½-Inch	¾-Inch
3-Inch	90 – 100	--	--
1½-Inch	60 – 85	--	--
1¼-Inch	--	95 – 100	--
1-Inch	--	--	100
¾-Inch	40 – 65	70 – 93	95 -100
No. 4	15 – 40	25 – 63	35 – 70
No. 10	10 – 30	16 – 48	15 – 55
No. 40	5 – 20	8 – 28	10 – 35
No. 200	2.0 – 12.0	2.0 – 12.0 ⁽¹⁾⁽²⁾	5.0 – 15.0 ⁽³⁾

⁽¹⁾ Limited to a maximum of 8.0% for the base placed between old and new pavement.

⁽²⁾ 8.0 – 15.0% if base is $\geq 50\%$ crushed gravel.

⁽³⁾ 4.0 – 10.0% if base is $\geq 50\%$ crushed gravel.

- b. Unless the Plans or Special Provisions specify otherwise, do the following:
 - 1) Use 1¼-inch in the top 4-inches of base. Use 3-inch base or 1¼-inch base in the lower base layers.
 - 2) Use ¾-inch in shoulders. Always use ¾-inch to match the thickness of the paved shoulder in the unpaved portion of the shoulder and on exposed shoulder foreslopes. CONTRACTOR may substitute 1¼-inch for ¾-inch elsewhere in shoulders and shoulder foreslopes. If using 1¼-inch, limit the allowable reclaimed asphalt content to 50% or less.
- c. Reclaimed asphalt with 100 percent passing a 1¼-inch sieve may be used as 1¼-inch base. ENGINEER will assess gradation primarily by visual observation but may test questionable material at CONTRACTOR's expense.

B. Open-Graded Base

1. General

- a. Provide base aggregates from an ENGINEER-approved source.
- b. Lime sludge obtained from the waste product of the paper manufacturing process is not acceptable.

2. Gradation

- a. Crushed stone or crushed gravel conforming to the following gradation requirements:

Sieve	Percent Passing (by weight)
1-Inch	90 – 100
3/8-Inch	45 – 65
No. 4	15 – 45
No. 10	0 – 20
No. 40	0 – 10
No. 200	0 – 0.5

C. Breaker Run

1. General

- a. Provide breaker run (stone or concrete) from an ENGINEER-approved source substantially free of unconsolidated overburden materials, topsoil, organic materials, steel, and other deleterious materials.

2. Gradation

- a. Predominately 6-inches or less in at least one dimension.
- b. Breaker run acceptability will be based on ENGINEER's visual observation.

D. Select Crushed Material

1. General

- a. Use for subgrade correction and improvement.
- b. Provide select crushed material from an ENGINEER-approved source substantially free of unconsolidated overburden materials, topsoil, organic materials, steel, and other deleterious materials.
- c. Acceptable materials include:
 - 1) Mined or quarried waste rock that is hard, durable, and when processed through a primary crusher, produce a material similar in size and texture to that produced from a quarry face.
 - 2) Crushed concrete substantially free of steel, building materials, or other deleterious material; and when processed through a primary crusher, produce a material similar in size and texture to that produced from a quarry face.
- d. Unacceptable materials include deteriorated concrete or other non-durable rock such as sandstone, shale, slate, disintegrated granite, or heavily weathered rock.

2. Gradation

- a. Conform to the following gradation:

Sieve	Percent Passing (by weight)
5-Inch	90 – 100
1½-Inch	20 – 50
No. 10	0 - 10

- b. Furnish material that has a minimum of 50%, by count, of the number of particles retained on the 1½-inch sieve with at least two fractured faces.
- c. Select crushed material acceptability will be based on ENGINEER's visual observation.

E. Pit Run

1. General

- a. Use for subgrade correction and improvement.
- b. Provide pit run material from an ENGINEER-approved source substantially free of topsoil, organic materials, and other deleterious materials.
- c. Acceptable materials include:
 - 1) A homogenous mixture of naturally occurring material that has at least 50% by weight retained on the 1½-inch sieve, with the remaining material composed of sand with a nominal quantity of silt/clay. The maximum size of an individual piece cannot be more than 2/3 of the specified individual layer thickness.
- d. Unacceptable materials include non-durable rock such as sandstone, shale, slate, disintegrated granite, or heavily weathered rock.
- e. Pit run material acceptability will be based on ENGINEER's visual observation.

PART 3 – EXECUTION

3.1. CONSTRUCTION

A. Preparation of Foundation for Aggregate Base

- 1. Prepare the foundation by scarifying, blading, leveling, and rolling as required to bring the foundation to the required grade, cross-section, and density. Uniformly compact the foundation to not less than the density for standard compaction of the existing foundation material. Remove any ruts or surface irregularities produced by hauling, other equipment, or other traffic. Correct soft or yielding areas, holes, or other defects that occur. Remove snow or ice, if any, from the foundation before placing the base.
- 2. Bring the foundation for open-graded base to the required grade and cross-section using a machine specifically for trimming foundations. Use a machine with automatic sensors to trim to the required grade and cross-section.

B. Constructing Base

- 1. Do not place base on foundations that are soft, spongy, or covered by ice or snow. Do not place base on frozen foundations.
- 2. Place aggregate in a way that minimizes hauling on the subgrade. Do not use vehicles or operations that damage the subgrade or in-place base. Deposit material in a way that minimizes segregation.

3. Ensure there is adequate moisture in the aggregate during placing, shaping, and compacting to prevent segregation and achieve adequate compaction.
 4. Compact base aggregate to 95% of Maximum Modified Proctor Density in accordance with ASTM D-1557.
 5. Perform the number of compaction tests specified in the Special Provisions, if applicable.
 6. Proof roll using a loaded tandem axle truck. Re-compact any areas showing appreciable displacement either laterally or longitudinally.
- C. Tolerances
1. Shape and compact the base surface to within 0.04 feet of plan elevation.
- D. Excavation Below Subgrade (EBS)
1. Excavate below subgrade to remove yielding areas as directed by ENGINEER.
 2. Payment for EBS will be:
 - a. Excavation at the contract unit price.
 - b. Aggregate base at the contract unit price for the type of base aggregate used.
- E. Dust Abatement
1. Minimize the dispersion of dust from all base course by applying water or other approved dust control measures as provided by the contract or required by the ENGINEER.
- F. Constructing Aggregate Shoulders
1. Construct aggregate shoulders to the elevations and typical sections in the plans, except for minor modifications to conform to other work.
 2. Use equipment that does not damage or mar the pavement surface, curb, or appurtenances.
 3. Place aggregate directly on the shoulder area between the pavement edge and the outer shoulder limits. Recover uncontaminated material deposited outside of the limits and place within the limits.
 4. Do not deposit aggregate on pavement during placement. Do not leave aggregate on the pavement overnight. After placing aggregate shoulder, keep the pavement free of loose aggregate.
 5. Spread and compact the aggregate in compacted layers of 6-inches or less.

6. After final compaction, shape the shoulders to remove longitudinal ridges to ensure proper drainage.

3.2. FIELD QUALITY CONTROL

A. Documentation

1. For each load of aggregate base provide a delivery ticket containing the following information:
 - a. Date.
 - b. Name of quarry.
 - c. Project name and location of delivery.
 - d. Material description.
 - e. Truck number.
 - f. Gross weight of vehicle, tare weight of vehicle, and subtraction to obtain net weight.
 - g. Signature of responsible party representing the CONTRACTOR.

END OF SECTION

SECTION 32 92 00.00

LANDSCAPING

PART 1 - GENERAL

1.1. SUMMARY

- A. Section Includes
 - 1. Restoration, seed, fertilizer, mulch, sod, trees, shrubs, biofiltration prairie plants, prairie seed, and wetland plants.
- B. Measurement Procedures
 - 1. Measure restoration by the square yard unless specified otherwise in the Contract Documents.
- C. Payment Procedures
 - 1. Pay for restoration by the square yard unless specified otherwise in the Contract Documents.
 - 2. The OWNER reserves the right to modify the landscaping limits during construction. Payment will be based on the final quantity and unit price bid for each bid item.

1.2. REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. Z60.1 – American Nursery Stock Standard
- B. ASTM International (ASTM)
 - 1. D2974 – Standard Test Methods for Determining the Water (Moisture) Content, Ash Content, and Organic Material of Peat and Other Organic Soils
 - 2. D4972 – Standard Test Methods for pH of Soils

1.3. DEFINITIONS

- A. Restoration includes the items of topsoil, seed, fertilizer and mulch, unless otherwise noted.
- B. ‘Catch’ or Uniform Stand: Germination/sprouting of seed resulting in plants of mature height and density. For seed mixture in Table 32 92 00.00-1 80% density is required.
- C. Deconsolidation: Loosening or decreasing density of soil by mechanical methods.

1.4. SUBMITTALS

- A. Furnish the OWNER with the proposed source or sources of topsoil to be used at least fifteen (15) working days prior to delivery. Obtain soil samples from the intended topsoil source and have a soil analysis performed by a soil testing laboratory to ensure conformity with the preceding specification. Do not deliver topsoil to the work site prior to review by the OWNER.

PART 2 - PRODUCTS

2.1. APPROVED SUPPLIERS

- A. Prairie seed and wetland plants approved suppliers (this is not an exclusive list):

1. Prairie Moon Nursery
32115 Prairie Lane | Winona, MN 55987
Telephone: 866.417.8156 | www.prairiemoon.com
2. Marshland Transplant
PO Box 1 | Berlin, WI 54923
Telephone: 920.361.4200
3. Agrecol
10101 North Casey Road | Evansville, WI 53536
Telephone: 608.223.3571 | www.agrecol.com
4. Prairie Nursery
PO Box 306 | W5856 Dyke Avenue | Westfield, WI 53964
Telephone: 800.476.9453
5. Ion Exchange
1878 Old Mission Road | Harpers Ferry, IA 52146-7533
Telephone: 563.419.0837
6. Shooting Star Native Seed
20740 County Road 33 - Box 191 | Spring Grove, MN 55974
Telephone: 507.498.3944 | www.shootingstarnativeseed.com

2.2. MATERIALS

- A. Topsoil

1. Friable soil, obtained from natural, well-drained areas.
2. The topsoil must be from a source where the soil was stripped from an active agricultural field and stockpiled. The topsoil shall not contain crown vetch, birds foot trefoil, wild parsnip, leafy spurge, creeping Charlie, field bindweed, reed canary grass, spotted knapweed, cut-leafed teasel or tansy seed. The CONTRACTOR shall inform the ENGINEER of the topsoil source. The topsoil

source will be assessed by the ENGINEER to determine if it meets the specifications. Only ENGINEER-approved topsoil shall be used on the project.

3. Free from refuse, heavy weeds or grasses.
4. Free from heavy roots, clay lumps, stones larger than 1-inch in size, sticks, brush, litter and other deleterious substances.
5. Maximum 5% by volume of the following: Stones smaller than 1-inch, coarse sand and small clay lumps.
6. Free from insoluble carbonates and conform to the following requirements (verified by soil analysis):
 - a. Between 1% and 13% organic matter, as determined by the test for organic matter in accordance with ASTM D2974.
 - b. Between 12% and 50% clay.
 - c. Less than 55% sand content.
 - d. PH between 5.0 and 8.0 as determined in accordance with ASTM D4972.
 - e. Meet the following mechanical criteria: 100% passes the 1-inch screen; 90-100% passes the No. 10 mesh sieve; and 40-60% passes the No. 100 mesh sieve.

B. Seed

1. Mixed and guaranteed by the dealer as provided in Table 32 92 00.00-1, located at the end of this Section.
2. Composed of seeds of the purity, germination and proportions, by weight, as given in Table 32 92 00.00-1, located at the end of this Section.
3. Seed mixture selection:
 - a. Seed Mixture #1: On average loam, heavy clay or moist soils.
 - b. Seed Mixture #2: On light, dry, sandy or gravelly soils.
 - c. Seed Mixture #1 or #2: On all ditches, in-slopes, median areas and low fill areas.
 - d. Seed Mixture #3: On rural areas and high cut and fill slopes, generally exceeding 6 to 8 feet.
 - e. Seed Mixture #4: In urban or other areas where a lawn type turf is desired.

- f. Seed Mixture #2 or #3: Suitable on very steep slopes where sterile soil and erosion conditions exist when used in conjunction with erosion control mat specified by the ENGINEER.

C. Prairie Seed

1. Consists of:
 - a. Genotypes from Wisconsin or the first tier of counties in Iowa, Illinois and Minnesota.
 - b. Harvested in the season immediately preceding the planting season.
 - c. 95% pure live seed and free of weed seeds to the limits allowable under the Federal Seed Act and applicable State seed laws.
 - d. No noxious weed seeds.
2. Deliver to the project site in the dealer's original, sealed bag and labeled in accordance with USDA Rules and Regulations under the current Federal Seed Act. Guarantee that each species is true to name, as labeled on the package.
3. Pack to maintain dormancy and prevent damage during transit, storage, and seeding operations (cool and dry). Remove any prairie seed that is wet, moldy or otherwise damaged from the project site.
4. Inoculate legume seed in the prairie seed mixture with the proper strain of rhizobium and scarify, if necessary.
5. Table 32 92 00.00-2 (Mesic Prairie) and Table 32 92 00.00-3 (Wet to Wet Mesic Prairie) contain prairie seed mixtures for this project and are located at the end of this Section. Mix the prairie seed on-site at the time of planting. Do not substitute prairie grass seed species and quantities unless approved by the ENGINEER seven (7) business days before the scheduled planting.

D. Fertilizer

1. Use fertilizers for seeding, sodding, or other plantings that are standard, commercial, packaged or bulk products, in granular or liquid form conforming to state requirements. Ensure that each container of packaged fertilizer is plainly marked with the analysis of the contents showing minimum percentages of total nitrogen, available phosphoric acid, and soluble potash.
2. If using fertilizer with a total of nitrogen, phosphoric acid, and potash greater than 32%, apply them at a rate that provides equal nitrogen, phosphoric acid, and potash.
3. Conform to the following minimum requirements:
 - a. Nitrogen, not less than 16%.

- b. Phosphoric Acid, not less than 6%.
 - c. Potash, not less than 6%.
 - 4. Provide a total of nitrogen, phosphoric acid, and potash of at least 32%.
 - 5. Provide total nitrogen at least equal to the sum of the phosphoric acid and soluble potash.
- E. Trees & Shrubs
 - 1. Nursery grown stock, transplanted or root-trimmed 2 or more times according to the kind and size of plants.
 - 2. Typical of their species, have well formed tops and root systems, and are free from injurious insects, plant diseases, or other plant pests. Furnish plants free from the following defects:
 - a. Damage to top, branches, trunk, bark, or roots.
 - b. Dried out roots.
 - c. Prematurely opened buds.
 - d. Thin or poor tops or root systems.
 - e. Evidence of mold.
 - f. Dry, loose, or broken ball of earth.
 - 3. Provide potted stock.

PART 3 - EXECUTION

3.1. CONSTRUCTION

A. Topsoil

- 1. Prairie grass areas require 6-inches of topsoil. Finish grade 6-inches and deconsolidate to a minimum depth of 3-inches using a disc or other acceptable equipment.
- 2. Rake or drag the surface of the topsoil until smooth, friable and of uniformly fine texture.

B. Seeding

1. Acceptable methods:

a. Base Method

- 1) Rake the ground until the surface is smooth, friable and of uniformly fine texture immediately before any seed is sown.
- 2) Seed areas evenly with a mechanical spreader at the rate of 5-pounds per 1,000 square feet for Seed Mixtures #1 through #4.
- 3) Rake lightly and roll with a 200-pound roller, and then water with a fine spray.

b. Alternate Method

- 1) Rake the ground until the surface is smooth, friable and of uniformly fine texture immediately before any seed is sown.
- 2) Seed areas evenly using a stream or spray of water under pressure and operated from an approved machine designed for that purpose. Place the selected seed mixture and water into a tank, provided within the machine, in sufficient quantities resulting in an application rate of 5-pounds per 1,000 square feet. Keep the tank contents stirred or agitated during this process. Spread the mixture within one hour after adding the seed to the tank.
- 3) Do not drag or roll the seeded areas.

2. Reseed any areas which fail to show a 'catch' or uniform stand with the original mixture. Repeat such re-seeding until final acceptance.

3. Repair damage resulting from erosion, gullies, washouts or other causes by filling with topsoil, tamping, re-fertilizing and re-seeding without extra cost to the OWNER.

4. Seed all disturbed areas in the project area unless otherwise specified.

C. Prairie Seed

1. Notify the ENGINEER at least three (3) business days before the scheduled date and time of the prairie grass planting. Allow ENGINEER to observe the original, unopened prairie seed packages prior to mixing and planting the prairie grass. Install prairie seeds and cover crop in the fall, between October 1st and November 15th, at the locations shown on the drawing(s).

2. Prairie Site Preparation

- a. Deconsolidate and finish grade the topsoil to a minimum depth of 4-inches using a disc, rototill or other tillage equipment followed by a fine drag

(finishing with a bulldozer is not sufficient) until smooth, friable and of uniformly fine texture. If the pond is completed between January 1st and August 31st, seed the prairie areas with Annual Rye (certified weed-free) at a rate of 80 lbs./acre. If the pond is completed between September 1st and December 31st, seed the prairie with winter wheat (certified weed-free) at a rate of 131 lbs./acre and Annual Rye (certified weed-free) at a rate of 30 lbs./acre. Place mulch over the prairie areas at a rate of 2-tons/acre immediately after seeding in accordance with Method C. Spray with glyphosate at a rate of 2-quarts/acre the first week of June, killing at least 99% of all plants. Spray with glyphosate at a rate of 2-quarts/acre the last week of July. Spray with glyphosate at a rate of 2-quarts/acre the third week of September. Use herbicide solutions containing 1% ammonium sulfate and 1% nonionic surfactant for all herbiciding events. Contact Stuart Boerst of McMahon Associates, Inc. via e-mail (sboerst@mcmgrp.com) a minimum of three (3) business days prior to each site preparation herbiciding event to provide the date of the herbiciding activity. Failure to conduct the site preparation herbiciding may result in the CONTRACTOR conducting an additional one year of site preparation herbiciding at the CONTRACTORs expense. Seed in accordance with the following paragraphs in the fall, between October 1st and November 15th, but before the ground is frozen.

3. Harrow the prairie area to a depth of ½-inch using the drag setting prior to prairie seeding. Sow prairie seed uniformly with a pneumatic broadcaster or Brillion-type mechanical planter. Calibrate the mechanical planter properly for uniform distribution of seed. Distribute seed quantities and types evenly across the entire area.
4. Do not perform broadcast seeding when winds exceed 5-miles per hour or when the seed bed is not in proper condition. Do not seed on saturated or frozen topsoil.
5. Sow the cover crop seed before or during prairie seeding unless otherwise approved by ENGINEER.
6. Cover areas planted with prairie seed with erosion control blanket meeting the following requirements:
 - a. Erosion mat Class I Type B as listed on WisDOT Product Acceptability List (PAL), current edition.
 - 1) Straw erosion mat only. Wood fiber and coconut not allowed.
 - 2) Biodegradable or photodegradable double netting and stitching. Netting weight 15% or less of the total blanket weight.
 - 3) Minimum product permissible shear stress of 1.0 lbs/sf (50Pa).
7. Do not extend the erosion control blanket onto the safety shelf of the pond.
8. Do not use fertilizer for the prairie seed planting.

9. Use a company with at least 3-years of experience and able to provide references for three (3) successful projects for planting the prairie seed.
10. Provide warranty that 75% (minimum) of the prairie grasses and forbs will be growing at the end of the second full growing season, with an average area density of, at least, five (5) plants/square foot of any seeded prairie grass or forb for every 2,000 square feet.

D. Fertilizer

1. Apply fertilizer containing 32% total of nitrogen, phosphoric acid, and potash at 7 pounds per 1,000 square feet, unless the Contract specifies otherwise. For fertilizer that contains a different percentage of components, determine the new application rate by multiplying the specified rate by a dimensionless conversion factor determined as follows:

$$\text{Conversion Factor} = 32 / \text{New Percentage of Components}$$

2. If fertilizing areas to receive sod, spread the fertilizer uniformly over the soil before sodding at the rate of 7 pound per 1,000 square feet and then work the fertilizer into the soil as part of the site preparation under Paragraph 3.1.

E. Trees & Shrubs

1. Place plants for best appearance.
2. Set plants vertical.
3. Remove non-biodegradable root containers.
4. Set plants in pits or beds, partly filled with prepared topsoil mix at a minimum depth of 6-inches under each plant. Remove wire and loosen ropes from the root ball.
5. Place bare root plant material so roots lie in a natural state. Backfill soil mixture in 6-inch layers. Maintain plant materials in a vertical position.
6. Saturate soil with water when the pit or bed is half full of topsoil and again when full.
7. See notes on plans or Tree Planting Detail for additional planting instructions.
8. Review the tree conditions after one full growing season. Replace any dead trees.

F. Adjusting Catch Basin, Cleanouts, Inlets, Manholes, Stop Boxes, and Valve Boxes

1. Adjust all catch basins, cleanouts, inlets, manholes, stop boxes, valve boxes, and other fixtures to the plan grade and alignment. This work is incidental to landscaping and restoration.

2. Include the repair of the uppermost 12-inches of the existing concrete structure in catch basin, inlet, and manhole adjustment.

END OF SECTION

TABLE 32 92 00.00-1

TABLE OF SEED MIXTURES

SPECIES	MIXTURES					
	% PURITY	% GERMINATION	% IN #1	% IN #2	% IN #3	% IN #4
Kentucky Bluegrass	98	85	50	10	20	50
Creeping Red Fescue	97	85	25	--	30	30
Perennial Ryegrass	97	90	25	30	--	--
Hard Fescue	97	85	--	25	25	--
Tall Fescue	98	85	--	35	--	--
Improved Fine Perennial Rye Grass	96	85	--	--	25	20

Table 32 92 00.00-2

MESIC PRAIRIE
2 Feet & Above NWL

Latin Name	Common Names	Amount / Acre	Seeds / oz.	Seeds / ft ²	Total 3.96 acres
<i>Agastache foeniculum</i>	Lavender Hyssop	1.0 oz.	90,000	2.07	4.0 oz.
<i>Allium cernuum</i>	Nodding Pink Onion	1.0 oz.	7,000	0.16	4.0 oz.
<i>Asclepias sullivanti</i>	Prairie Milkweed	0.2 oz.	4,500	0.02	0.8 oz.
<i>Asclepias tuberosa</i>	Butterfly Weed	10.0 oz.	4,300	0.99	39.6 oz.
<i>Astragalus canadensis</i>	Canada Milk Vetch	1.0 oz.	17,000	0.39	4.0 oz.
<i>Baptisia lactea</i>	Cream False Indigo	1.0 oz.	1,400	0.03	4.0 oz.
<i>Baptisia lactea</i>	White False Indigo	2.0 oz.	1,700	0.08	7.9 oz.
<i>Bouteloua curtipendula</i>	Side Oats Grama	32.0 oz.	6,000	4.41	126.7 oz.
<i>Camassia scilloides</i>	Wild Hyacinth	1.0 oz.	4,200	0.10	4.0 oz.
<i>Carex bicknellii</i>	Copper-Shouldered Oval Sedge	0.5 oz.	17,000	0.20	2.0 oz.
<i>Carex vulpinoidea</i>	Brown Fox Sedge	1.0 oz.	100,000	2.30	4.0 oz.
<i>Comandra umbellata</i>	False Toadflax	2.0 oz.	700	0.03	7.9 oz.
<i>Dalea candida</i>	White Prairie Clover	8.0 oz.	19,000	3.49	31.7 oz.
<i>Dalea purpurea</i>	Purple Prairie Clover	40.0 oz.	15,000	13.77	158.4 oz.
<i>Dichanthelium oligosanthes</i>	Schribner's Panic Grass	1.0 oz.	9,000	0.21	4.0 oz.
<i>Dodecatheon meadia</i>	Shooting Star	3.0 oz.	60,000	4.13	11.9 oz.
<i>Drymocallis arguta</i>	Prairie Cinquefoil	0.05 oz.	230,000	0.26	0.2 oz.
<i>Echinacea pallida</i>	Pale Purple Coneflower	10.0 oz.	5,200	1.19	39.6 oz.
<i>Echinacea purpurea</i>	Purple Coneflower	7.0 oz.	6,600	1.06	27.7 oz.
<i>Eryngium yuccifolium</i>	Rattle Snake Master	3.0 oz.	7,500	0.52	11.9 oz.
<i>Euphorbia corollata</i>	Flowering Spurge	2.0 oz.	8,000	0.37	7.9 oz.
<i>Galium boreale</i>	Northern Bedstraw	0.4 oz.	56,000	0.51	1.6 oz.
<i>Heliopsis helianthoides</i>	Ox Eye Sunflower	4.0 oz.	6,300	0.58	15.8 oz.
<i>Liatris aspera</i>	Rough Blazingstar	4.0 oz.	16,000	1.47	15.8 oz.
<i>Liatris ligulistylis</i>	Meadow Blazingstar	8.0 oz.	10,000	1.84	31.7 oz.
<i>Liatris pycnostachya</i>	Prairie Blazingstar	1.0 oz.	11,000	0.25	4.0 oz.
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.3 oz.	500,000	3.44	1.2 oz.
<i>Lobelia spicata</i>	Pale Spiked Lobelia	0.3 oz.	900,000	6.20	1.2 oz.
<i>Lupinus perennis</i>	Lupine	6.0 oz.	1,100	0.15	23.8 oz.
<i>Monarda fistulosa</i>	Bergamot	0.3 oz.	70,000	0.48	1.2 oz.
<i>Parthenium integrifolium</i>	Wild Quinine	3.0 oz.	7,000	0.48	11.9 oz.
<i>Pedicularis canadensis</i>	Wood Betony	0.5 oz.	33,000	0.38	2.0 oz.
<i>Penstemon digitalis</i>	Foxglove Beardtongue	0.5 oz.	130,000	1.49	2.0 oz.
<i>Penstemon gracilis</i>	Slender Beardtongue	0.2 oz.	450,000	2.07	0.8 oz.
<i>Penstemon grandiflorus</i>	Large-Flowered Beardtongue	5.0 oz.	13,000	1.49	19.8 oz.
<i>Penstemon hirsutus</i>	Hairy Beardtongue	0.4 oz.	350,000	3.21	1.6 oz.
<i>Penstemon pallidus</i>	Pale Beardtongue	0.3 oz.	200,000	1.38	1.2 oz.
<i>Phlox glaberrima var. interior</i>	Smooth Phlox	0.5 oz.	7,200	0.08	2.0 oz.
<i>Phlox pilosa</i>	Downy Phlox	2.0 oz.	19,000	0.87	7.9 oz.
<i>Physostegia virginiana</i>	Obedient Plant	1.0 oz.	11,000	0.25	4.0 oz.
<i>Pycnanthemum virginianum</i>	Common Mountain Mint	0.2 oz.	220,000	1.01	0.8 oz.
<i>Ratibida pinnata</i>	Yellow Coneflower	0.1 oz.	30,000	0.07	0.4 oz.
<i>Rudbeckia hirta</i>	Black Eyed Susan	0.5 oz.	92,000	1.06	2.0 oz.
<i>Rudbeckia subtomentosa</i>	Sweet Black Eyed Susan	0.05 oz.	43,000	0.05	0.2 oz.
<i>Schizachyrium scoparium</i>	Little Bluestem	112.0 oz.	15,000	38.57	443.5 oz.
<i>Silphium terebinthinaceum</i>	Prairie Dock	0.5 oz.	1,000	0.01	2.0 oz.
<i>Sisyrinchium campestre</i>	Prairie Blue Eyed Grass	1.0 oz.	45,000	1.03	4.0 oz.
<i>Solidago rigida</i>	Stiff Goldenrod	1.0 oz.	46,000	1.06	4.0 oz.
<i>Solidago speciosa</i>	Showy Goldenrod	2.0 oz.	105,000	4.82	7.9 oz.
<i>Symphotrichum azureus</i>	Sky Blue Aster	0.5 oz.	82,000	0.94	2.0 oz.
<i>Symphotrichum laevis</i>	Smooth Blue Aster	2.0 oz.	48,000	2.20	7.9 oz.
<i>Symphotrichum novae-angliae</i>	New England Aster	0.3 oz.	70,000	0.48	1.2 oz.
<i>Sporobolus heterolepis</i>	Prairie Dropseed	1.0 oz.	16,000	0.37	4.0 oz.
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	4.0 oz.	8,000	0.73	15.8 oz.
<i>Veronicastrum virginicum</i>	Culvers Root	0.4 oz.	800,000	7.35	1.6 oz.
<i>Viola pedatifida</i>	Prairie Violet	1.0 oz.	26,000	0.60	4.0 oz.
<i>Zizia aptera</i>	Heart-Leaved Golden Alexander	2.0 oz.	12,000	0.55	7.9 oz.
<i>Zizia aurea</i>	Golden Alexanders	2.0 oz.	11,000	0.51	7.9 oz.
TOTAL		295.0 oz.		123.81	1,172.2 oz.

COVER CROP

Latin Name	Common Names	Amount/ Acre	Total 3.96 acres
<i>Lolium multiflorum</i>	Annual Rye	2.0 lbs.	7.9 lbs.
<i>Triticum aestivum</i>	Winter Wheat	10 lbs.	39.6 lbs.

Table 32 92 00.00-3

WET TO WET-MESIC PRAIRIE
2-Foot Above NWL To NWL

Latin Name	Common Names	Amount /		Total	
		Acre	Seeds / oz.	Seeds / ft ²	0.12 acres
<i>Asclepias incarnata</i>	Marsh Milkweed	7.0 oz.	4,800	0.77	0.8 oz.
<i>Asclepias tuberosa</i>	Butterfly Weed	4.0 oz.	4,300	0.39	0.5 oz.
<i>Astragalus canadensis</i>	Canada Milk Vetch	1.0 oz.	17,000	0.39	0.1 oz.
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0.5 oz.	280,000	3.21	0.1 oz.
<i>Carex bebbii</i>	Bebb's Sedge	4.0 oz.	34,000	3.12	0.5 oz.
<i>Carex comosa</i>	Bottlebrush Sedge	4.0 oz.	30,000	2.75	0.5 oz.
<i>Carex hystericina</i>	Porcupine Sedge	4.0 oz.	30,000	2.75	0.5 oz.
<i>Carex lacustris</i>	Lake Sedge	0.5 oz.	11,000	0.13	0.1 oz.
<i>Carex stipata</i>	Fox Sedge	4.0 oz.	34,000	3.12	0.5 oz.
<i>Carex vulpinoidea</i>	Brown Fox Sedge	4.0 oz.	100,000	9.18	0.5 oz.
<i>Chelone glabra</i>	White Turtlehead	0.3 oz.	92,000	0.63	0.1 oz.
<i>Echinacea pallida</i>	Pale Purple Coneflower	5.0 oz.	5,200	0.60	0.6 oz.
<i>Echinacea purpurea</i>	Purple Coneflower	5.0 oz.	6,600	0.76	0.6 oz.
<i>Eleocharis palustris</i>	Great Spike Rush	2.0 oz.	51,000	2.34	0.2 oz.
<i>Elymus virginicus</i>	Virginia Wild Rye	20.0 oz.	4,200	1.93	2.4 oz.
<i>Eryngium yuccifolium</i>	Rattlesnake Master	5.0 oz.	7,500	0.86	0.6 oz.
<i>Eutrochium maculatum</i>	Joe-Pye Weed	0.5 oz.	95,000	1.09	0.1 oz.
<i>Eupatorium perfoliatum</i>	Boneset	0.4 oz.	160,000	1.47	0.1 oz.
<i>Gentiana andrewsii</i>	Bottle Gentian	0.4 oz.	280,000	2.57	0.1 oz.
<i>Gentianopsis crinita</i>	Fringed Gentian	0.2 oz.	200,000	0.92	0.1 oz.
<i>Glyceria canadensis</i>	Rattlesnake Manna Grass	2.5 oz.	74,000	4.25	0.3 oz.
<i>Glyceria striata</i>	Fowl Manna Grass	2.0 oz.	90,000	4.13	0.2 oz.
<i>Helenium autumnale</i>	Sneezeweed	0.4 oz.	130,000	1.19	0.1 oz.
<i>Helianthus annuus</i>	Ox-eye Sunflower	1.0 oz.	6,300	0.14	0.1 oz.
<i>Hypericum pyramidatum</i>	Great St. John's Wort	0.2 oz.	190,000	0.87	0.1 oz.
<i>Juncus effusus</i>	Soft Rush	0.1 oz.	1,000,000	2.30	0.1 oz.
<i>Leersia oryzoides</i>	Rice Cut Grass	1.0 oz.	34,000	0.78	0.1 oz.
<i>Liatris spicata</i>	Marsh Blazingstar	3.0 oz.	11,000	0.76	0.4 oz.
<i>Liatris pycnostachya</i>	Prairie Blazingstar	4.0 oz.	11,000	1.01	0.5 oz.
<i>Lobelia cardinalis</i>	Cardinal Flower	0.5 oz.	400,000	4.59	0.1 oz.
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.5 oz.	500,000	5.74	0.1 oz.
<i>Lycopus americanus</i>	Water Horehound	0.5 oz.	130,000	1.49	0.1 oz.
<i>Mimulus ringens</i>	Monkey Flower	0.05 oz.	2,300,000	2.64	0.1 oz.
<i>Monarda fistulosa</i>	Bergamot	0.2 oz.	70,000	0.32	0.1 oz.
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.0 oz.	130,000	2.98	0.1 oz.
<i>Physostegia virginiana</i>	Obedient Plant	2.0 oz.	11,000	0.51	0.2 oz.
<i>Pycnanthemum virginianum</i>	Common Mountain Mint	0.2 oz.	220,000	1.01	0.1 oz.
<i>Rudbeckia hirta</i>	Black-Eyed Susan	1.0 oz.	92,000	2.11	0.1 oz.
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan	0.2 oz.	43,000	0.20	0.1 oz.
<i>Scirpus atrovirens</i>	Green Bulrush	0.3 oz.	460,000	3.17	0.1 oz.
<i>Scirpus cyperinus</i>	Wool-Grass	0.1 oz.	1,700,000	3.90	0.1 oz.
<i>Schoenoplectus pungens</i>	Three Square Bulrush	1.0 oz.	12,000	0.28	0.1 oz.
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	1.0 oz.	31,000	0.71	0.1 oz.
<i>Silphium terebinthinaceum</i>	Prairie Dock	1.0 oz.	1,000	0.02	0.1 oz.
<i>Solidago riddellii</i>	Riddell's Goldenrod	3.0 oz.	95,000	6.54	0.4 oz.
<i>Spartina pectinata</i>	Prairie Cordgrass	8.0 oz.	6,600	1.21	1.0 oz.
<i>Symphyotrichum laeve</i>	Smooth Blue Aster	2.0 oz.	55,000	2.53	0.2 oz.
<i>Symphyotrichum novae-angliae</i>	New England Aster	1.0 oz.	66,000	1.52	0.1 oz.
<i>Symphyotrichum puniceus</i>	Swamp Aster	1.0 oz.	80,000	1.84	0.1 oz.
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue	0.5 oz.	11,000	0.13	0.1 oz.
<i>Tradescantia ohioensis</i>	Ohio Spiderwort	4.0 oz.	8,000	0.73	0.1 oz.
<i>Verbena hastata</i>	Blue Vervain	1.0 oz.	93,000	2.13	0.1 oz.
<i>Veronicastrum virginicum</i>	Culvers Root	0.4 oz.	800,000	7.35	0.1 oz.
<i>Zizia aurea</i>	Golden Alexanders	3.0 oz.	11,000	0.76	0.4 oz.
TOTAL		119.5 oz.		108.84	14.9 oz.

COVER CROP

Latin Name	Common Names	Amount/	Total	
		Acre	0.12	acres
<i>Lolium multiflorum</i>	Annual Rye	2.0 lbs.	0.24	lbs.
<i>Triticum aestivum</i>	Winter Wheat	10 lbs.	1.2	lbs.

DIVISION 33 – UTILITIES

SECTION 33 01 30.11 CLEANING & VIDEO INSPECTION OF PIPE LINE

SECTION 33 05 05.00 BURIED PIPING INSTALLATION

SECTION 33 05 07.13 UTILITY DIRECTIONAL DRILLING

SECTION 33 42 11.00 STORM SEWERAGE

SECTION 33 01 30.11

CLEANING & VIDEO INSPECTION OF PIPE LINE

PART 1 - GENERAL

1.1. SUMMARY

A. Section Includes

1. Cleaning and video inspection of pipe lines requirements, report requirements, and traffic control requirements.

B. Scope of Work

1. Provide cleaning and video inspection for storm sewer installed.
2. Provide required signage and traffic control to assure a safe project.
3. Provide work in the areas shown on the drawings and map included in the Bidding Documents.

1.2. REFERENCES

- A. U.S. Department of Labor Occupational Safety and Health Administration (OSHA) – Occupational Safety and Health Act
- B. U.S. Department of Transportation Federal Highway Administration (FHWA) – Manual on Uniform Traffic Control Devices

1.3. SUBMITTALS

A. Product Data

1. Submit technical literature detailing the construction and capabilities of the equipment proposed for this cleaning and inspection.

B. Work Plan & Schedule

1. Submit, for review by the OWNER and ENGINEER, a proposed plan of action for cleaning and inspection of the sanitary sewers.

1.4. QUALITY ASSURANCE

A. Qualifications

1. Submit for review by the OWNER and ENGINEER, a resume showing that the CONTRACTOR proposed for this project has at least 5-years of experience in pipe line cleaning and video inspection.

2. Provide a list of at least three (3) sewer cleaning and televising projects (with similar sized pipe) with references including the following:
 - a. Location.
 - b. Date.
 - c. Diameter and Length of Interceptor.
 - d. Project Cost.
 - e. Client Contact Person.
 - f. Telephone Number.

B. Regulatory Requirements

1. Comply with Federal, State, and local requirements.

PART 2 - PRODUCTS

2.1. MATERIALS

A. Video Recording

1. Record inspection on a DVD or flash drive, capable of being viewed on a DVD player or Windows® media player.

2.2. EQUIPMENT

A. Closed Circuit Television Camera

1. Television equipment includes television camera, television monitor, cables, power source, lights and other equipment. Use a television camera specifically designed and constructed for operation in connection with sewer inspection meeting these minimum requirements:
 - a. Pan & Tilt Radial View Color Sewer TV Camera.
 - b. 360 Degree Radial x 300 Degree Pan & Tilt Viewing Field.
 - c. Multi-Conductor.
 - d. Remote Adjustable Optical Focus, Remote Light Compensating Iris.
 - e. Automatic White Balance Circuitry, NTSC Color.
 - f. Low Light, 3 Lux Camera.

2. Provide a pan and tilt view camera specifically designed to provide a close-up view of sewer pipe walls and lateral entrances using a low light sensitive camera, movable camera head and directional lighting. The unit is color and designed for operation through up to 2,000 feet of multi-conductor cable in sanitary and storm sewers. Chassis construction is 100% solid state circuitry designed to withstand shocks and vibration normally sustained while being pulled through a pipe. The image pick-up device is a low light sensitive, 3 Lux, solid-state camera incorporating the latest high-resolution closed-circuit television technology. Operating climatic ranges of the camera are 14°F to 86°F, and up to 100% relative humidity.
3. Provide remote reading footage counter accurate to 1% over the length of the particular section being inspected and mounted over the television monitor.

B. Sewer Cleaning Equipment

1. Provide a jet cleaner with a vacuum/air transport debris removal system.
2. Provide a water pump system on the cleaning vehicle with the ability to pump between 50 to 65-gallons per minute at a pressure of 1,200 to 1,500 pounds per square inch. Do not provide units with pumps smaller than this.

PART 3 - EXECUTION

3.1. PREPARATION

A. Cleaning Requirements

1. Remove debris and sediment to assure that the sanitary sewer can perform as designed.
2. Notify the ENGINEER and the OWNER immediately if the cleaning must be suspended due to adverse weather conditions or unforeseen obstacles.
3. Dispose of debris removed from the sewers during the cleaning process in compliance with all Federal, State and local requirements. Dispose of these materials and pay all fees associated with the disposal. The OWNER will not provide a disposal site.
4. Purchase water used by the sewer cleaning equipment from Kimberly Water Utility:
 - a. Contact the Kimberly Water Utility for current rates.

B. Traffic Control

1. Obtain written permission from the authorized official of the Municipality and, if applicable, the appropriate County or State Highway Official or property owner prior to placing devices intended to close alleys, streets, highways, thoroughfare,

traffic lane, or public or private way. Notify the Chiefs of the Fire and Police Department(s) of the affected municipality(ies) prior to any such closure.

2. Erect and maintain barricades, guardrails, lights and signs necessary for public safety and convenience. Mark all hazards within the limits of the work or on detour around the work with well-painted, well-maintained, barricades, lanterns, torches, flares, reflectors, electric lights, flashers or caution, warning and directional signs in sufficient quantity and size to adequately protect life and property. Move, change, increase or remove these safeguards as required during the progress of the work to meet changing conditions.
3. Conduct traffic control operations in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and local requirements.
4. Maintain barricades in rigidly assembled condition. Keep barricades clean and the reflecting strips in good repair to be readily discernible at all times.
5. Handle materials using provisions for the protection of traffic and the public. Make reasonable and satisfactory provisions for travel on sidewalks, crosswalks, streets, roads, railroads and private ways.
6. Comply with "Occupational Safety & Health Act" (OSHA) requirements issued by the Federal Government and/or adopted by the State and local laws, rules and regulations, as they apply.
7. The OWNER reserves the right to remedy any neglect on the part of the CONTRACTOR as regards to protection of the work and public after 24-hours notice, in writing. In the case of emergency, the OWNER reserves the right to remedy any neglect without due notice. In either case, the cost of such remedy will be deducted from any money due or to become due to the CONTRACTOR.

C. Security

1. Provide site security. Provide (if deemed necessary) such watchmen and take such other precautionary measures as deemed necessary to protect CONTRACTOR's interests.

D. Temporary First Aid Facilities

1. Comply with the requirements of the "Manual of Accident Prevention in Construction", Associated General Contractors of America, Inc., latest edition, Section 2, First Aid, and supply on the site a first aid kit, dust-proof, protected from heat and moisture and containing, as a minimum, the first aid items listed according to the number of employees.

3.2. CONSTRUCTION

A. Pollution Control

1. Comply with all Federal, State and local requirements covering pollution control.

2. Ensure that all incoming wastes receive treatment equivalent to the treatment currently being provided.

B. Sewer Flow Control

1. When sewer depth of flow at the upstream manhole of the manhole section being worked is above the maximum allowable for television inspection, joint testing and/or sealing; reduce the flow to the level shown below by operation of pump stations, plugging or blocking of the flow, or by pumping and bypassing of the flow, as specified.
2. Do not exceed the depth of flow shown below for the respective pipe sizes, as measured in the manhole when performing television inspection.
 - a. 6 to 10-Inch Pipe 20% of Pipe Diameter
 - b. 12 to 24-Inch Pipe 25% of Pipe Diameter
 - c. 27-Inch & Larger Pipe 30% of Pipe Diameter
3. Plugging or Blocking:
 - a. Insert a sewer line plug into the line upstream of the section being worked. Use a plug designed so that all or any portion of the sewage can be released. During television inspection or testing and sealing operations, reduce flow to within the limits specified above. After the work has been completed, remove plug and restore flow to normal.
4. Pumping & Bypassing:
 - a. When pumping and bypassing is required, supply pumps, conduits and other equipment to divert the flow of sewage around the manhole section where work is being performed. Provide a bypass system of sufficient capacity to handle existing flow, plus additional flow that may occur during a rainstorm. Furnish the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, equip engines in a manner to keep noise to a minimum.
5. Flow Control Precautions:
 - a. When flow in a sewer line is plugged, blocked or bypassed, protect the sewer lines from damage that might result from sewer surcharging. Ensure that sewer flow control operations do not cause flooding or damage to public or private property being serviced by the sewers involved.

C. Television Inspection

1. Notify the ENGINEER and the OWNER immediately if the televising must be suspended due to adverse weather conditions or unforeseen obstacles.

2. Move the camera through the line in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the sewer's condition. Do not pull the camera at a speed greater than 30 feet per minute. Use manual winches, power winches, TV cable and powered rewinds, or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions, to move the camera through the sewer line. If, during the inspection operation, the television camera will not pass through the entire manhole section, reset the equipment in a manner so the inspection can be performed from the opposite manhole.
3. In the event the section being televised has substantial flow entering the sewer between manholes, such that inspection of the sewer is impaired, coordinate with the OWNER of source of flow to have such flow temporarily stopped and/or reschedule television inspection of the particular section to a time when such flow is reduced to permit proceeding with the television inspection.
4. When sewer line depth of flow at the upstream manhole of the section being televised is above the maximum allowable for television inspection, reduce the flow to permit proceeding with the television inspection.
5. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, use telephones, radios or other suitable means of communication between the two (2) manholes of the section being inspected to ensure that adequate communications exist between members of the crews.
6. Check accuracy of the measurement meters daily by use of a walking meter, roll-a-tape or other suitable device. Begin footage measurements at the sewer line point of penetration of the upstream manhole, unless specific permission is given to do otherwise. Show footage on the video data view at all times.

D. Documentation of Television Results

1. Document television inspections using an in-vehicle computer system. This system must be IBM compatible. Supply a report documenting defects and general information on the pipe being viewed along with an index for retrieving the information to the OWNER.
2. Provide typed or computer printed television inspection logs to the OWNER. Show the location, in relation to adjacent manholes, of each source of infiltration discovered in the location reports. Record other data of significance, including the location of buildings and house service connections, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features. Provide a voice recording on the DVD or flash drive with brief and informative comments on the sewer conditions.
3. Prepare color DVD or flash drive recordings of the data on the television monitor. Provide two (2) copies of each DVD or flash drive; one (1) for the OWNER, and one (1) for the ENGINEER.
4. Record for playback at the same speed that it was recorded. Provide tabs for the start of each sewer segment. Provide title to the DVD or flash drive to the

OWNER. Provide DVD's or flash drives and necessary playback equipment for review by the OWNER during the project.

5. Include the following information on the DVDs or flash drives:
 - a. Data View:
 - 1) Report number.
 - 2) Date of television inspection.
 - 3) Upstream and downstream manholes numbers.
 - 4) Current distance along reach.
 - 5) Printed labels on the container and DVD or flash drive, with location information, date, format information and other descriptive information.
 - b. Audio:
 - 1) Date and time of television inspection, operator name and name of adjacent street.
 - 2) Verbal confirmation of upstream and downstream manhole numbers and TV direction in relation to direction of flow.
 - 3) Verbal description of pipe size, type and pipe joint length.
 - 4) Verbal description and location of each service connection and pipe defect.
 - 5) Type of weather during inspection.
6. Include the following information on the computerized logs:
 - a. Location of each point of leakage.
 - b. Location of each service connection.
 - c. Location of any damaged sections, nature of damage and location with respect to pipe axis.
 - d. Deflection in alignment or grade of pipe.
 - e. Record of repairs and quantity of sealing material used (if applicable).
 - f. Date, time, municipality, street, basin, manhole section, reference manhole number, name of operator, inspector and weather conditions.

SECTION 33 05 05.00

BURIED PIPING INSTALLATION

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Installing underground utilities using the open cut trenching method.

1.2. MEASUREMENT PROCEDURES

A. Rock Excavation in Trenches

1. Measure 1 foot outside the wall lines of the manhole.
2. Measure a 30-inch width for pipe sized up to and including 12-inch pipe.
3. Measure the nominal inside pipe diameter plus 18-inches for pipes larger than 12-inches.
4. Measure to a maximum depth of 6-inches below the outside bottom of the pipe barrel.
5. Measure 1 foot outside of the outside wall surfaces of manhole.

1.3. PAYMENT PROCEDURES

- A. Include cost of trenching, backfilling, and compacting backfill in the unit price bid per foot for the type of pipe installed.
- B. Rock Excavation in Trenches
 1. Pay per cubic yard of rock removed.
 2. Additional rock removed for CONTRACTOR's convenience will not be paid.

PART 2 – PRODUCTS

2.1. OPTIONAL SPECIAL BACKFILL

A. Aggregate Slurry

1. Aggregate mixed with water to inundate the aggregate and provide an approximate 3-inch slump.

Sieve Sizes	Percentage Passing by Weight
1-inch	100%
¾-inch	90-100
3/8-inch	20-55
No. 4	0-10
No. 8	0-5

B. Flowable Fill

1. Highly flowable utility trench mix containing 50 lbs. of Type I cement (ASTM C-150), 100 lbs. of Class C Flyash (ASTM C-618), and approximately 2,500 lbs. of Fine Aggregate (ASTM C-33).
2. Air entrainment of 10% to 30%.
3. Provide a maximum 28-day compressive strength of 150 psi.
4. Submit mix design and strength reports to ENGINEER for review. Include sufficient water content to provide a consistency resulting in a self-leveling product at the point of placement.

PART 3 – EXECUTION

3.1. PROTECTION OF EXISTING STRUCTURES & UTILITIES

- A. Protect against damage surfaces and features, including buildings, pavements, trees and shrubs, within and adjacent to the construction easement or right-of-way, which are to be saved as indicated on the drawings or by the ENGINEER.
- B. Support and protect existing gas pipes, water pipes, steam pipes, electric and telephone other surface or subsurface structures, either of a private or of public ownership, whether or not indicated or shown on the drawings. Perform such work at CONTRACTOR'S expense, and according to their own drawings.
- C. Contact public utilities for the location of their underground structures such as ducts, mains or services for electric power, gas and telephone. Support above ground poles for electric power, lighting and telephone wires and cables. If the CONTRACTOR damages such utilities or subsurface structures, they shall make settlement with the OWNER(s) of the utility (ies).

3.2. INTERFERENCE OF UNDERGROUND STRUCTURES

- A. Notify ENGINEER and OWNER when an unknown underground structure is encountered in the trench or tunnel of the proposed utility and because of interference part or all of the structure requires relocation.
- B. Notify the ENGINEER and the OWNER of underground structure of CONTRACTOR'S desire to temporarily relocate such structure or to discontinue the service therein, and receive from the OWNER of such underground structure permission for such relocation or

discontinuance of service if the relocation is to be made for CONTACTOR'S convenience. Replace structure to original position and condition. Structure owner may perform the work in connection with said relocation, discontinuance or replacement at the CONTRACTOR'S expense.

- C. Protect, support, or brace existing underground structures where the excavation of either a trench or tunnel extends under or approaches it.

3.3. TRENCHING

- A. Support tunnel sections exceeding 2 feet in length in accordance with the applicable codes.
- B. Excavate the maximum typical trench width from 2 feet above the top of the pipe to the trench bottom to the outside diameter of the pipe plus 24-inches. Excavate wider to facilitate trench shields or trench boxes, if applicable. Keep the trench walls vertical whenever possible. Do not side slope or "bench down" in the trench where the trench is excavated within a permanent pavement or where such side-sloping or benching would encroach upon private property or endanger existing or future underground utilities or structures.
- C. Excavate trenches straight between designated angle points to permit the pipe to be laid straight and true to line and grade.
- D. Where the normal trench width below 2 feet above the top of the pipe is exceeded for any reason, except due to the use of tight sheeting, furnish an adequate section for the actual trench width. Accomplish this by furnishing a stronger pipe, a concrete cradle, cap, or envelope, whichever is an adequate section. You may use tight sheeting in lieu of a stronger pipe section to maintain the required trench width for the required height and depth. When the pipe specified is strong enough for the actual trench width, no further provision is required for the greater trench width.
- E. Excavate the trench to the required depth below the flow line (invert) of the pipe line being constructed allowing for the thickness of the pipe and the depth required for bedding. If the CONTRACTOR excavates too deep for underground mains, refill all such excavated space with such material and in such manner as directed by the OWNER. Refill the excavated space below the main(s) with special bedding if required by the specifications.
- F. Backfill as speedily as possible. Do not leave backfilling unfinished more than 100 feet behind the completed pipe work unless permitted by the OWNER. Do not perform new trenching when earlier trenches need backfilling or labor is needed to restore the surfaces of streets or other areas to a safe and proper condition. Do not excavate more than one (1) street crossing by the same trench at any one time. Install and maintain barricades and warning devices around open trenches.
- G. Place steel plates with minimum dimensions of 4' x 8' x 1" to bridge open trenches crossing roadways. Secure the plates against the possibility of shifting or dropping into the excavation. During winter months, do not leave these plates in the roadway overnight unless approved by the OWNER.

H. Unstable Foundation

1. Remove and replace undesirable material below the trench bottom, manhole or any structure, such as organic soils, etc., which cannot adequately support the sewer, with crushed stone. OWNER will pay for additional excavation and stone fill in accordance with the prices listed in the Schedule of Supplemental Unit Prices. Where the distance to stable ground is excessive, the OWNER reserves the right to order, in writing, as an extra, such other types of foundation as deemed necessary.
2. Inform ENGINEER immediately, and later in writing, of all locations of unstable trench conditions where additional stone fill is required.

I. Pipe Bedding Sections & Materials

1. Use one of the following bedding sections for pipe line construction, unless otherwise stated in the Special Provisions.
2. Standard Section, Class C
 - a. Excavate trench to allow 4-inches of bedding material under the pipe barrel and 3-inches of bedding material under the bell.
 - b. Place and compact bedding material to springline of the pipe.
 - c. Place and compact excavated material to a point 2 feet above the top of the pipe. Acceptable excavated material is free of stones larger than 2-inches in diameter, sections of concrete, or any material considered unsuitable for backfill by the ENGINEER.
 - d. Acceptable bedding material is shown in Table 33 05 05.00-2, Table 33 05 05.00-3 or Table 33 05 05.00-4 (located at the end of this section).
 - e. Fill excess depth with Class D concrete or crushed stone if excavation is deeper than 6-inches below the pipe barrel.
3. Compacted Section, Class B
 - a. Excavate trench to allow 4-inches of bedding material under the pipe barrel and 3-inches of bedding material under the bell.
 - b. Place and compact bedding material to a point 12-inches above the top of the pipe.
 - c. Acceptable bedding material is shown in Table 33 05 05.00-2, Table 33 05 05.00-3 or Table 33 05 05.00-4 (located at the end of this section).
 - d. Fill excess depth with Class D concrete or crushed stone if excavation is deeper than 6-inches below the pipe barrel.

4. Submit bedding material sieve analysis to ENGINEER prior to the beginning of construction.
5. Provide up to an additional 3-inches of crushed stone below the 4-inch pipe bedding as required to facilitate trench drainage in wet trench conditions. Include in the unit price bid per foot of pipe line.

J. Backfilling Trenches

1. Excavated Material for Backfill

- a. Acceptable excavated material: loam, clay or other materials that, in the judgment of the ENGINEER, are suitable for backfilling.
- b. Unacceptable backfill materials: vegetable or other organic matter, all types of refuse, large pieces or fragments of concrete, large stones or boulders and such other material as in the judgment of the ENGINEER are unsuitable for backfilling, and frozen backfill.
- c. Replace unacceptable excavated material with suitable clay, loam, or gravel backfill upon the written order of the OWNER as an extra.
- d. Backfill the trench section above the bedding section of all pipe lines to a level 3 feet above the pipe with material free of any stones or concrete larger than 3-inches in diameter.
- e. Do not use excavated rock within 10 feet of any manhole.

2. Special Backfill

- a. Backfill with special backfill under aggregate bases or paved surfaces.
- b. Acceptable Material
 - 1) Meets sieve analysis specified in Table 33 05 05.00-5.
 - 2) Consists of durable particles including unwashed bank run sand and crushed bank run gravel.
 - 3) Approved bedding material for sewer installation.
 - 4) Material excavated from any sewer, water or force main trench that, in the opinion of the ENGINEER, is found to meet the requirements for special backfill.
- c. Mechanically compact special backfill.

K. Surface Restoration

1. Restore the project area to a "before construction" condition. The opinion of the OWNER is final in determining the condition of the project site restoration.

2. Restore asphalt, concrete or gravel surfaces in accordance with the requirements of the base aggregates, asphaltic concrete paving, concrete pavements, concrete curb & gutter, concrete sidewalk & driveway, and pavement and resurfacing specifications.
3. Restore unpaved surfaces in accordance with the requirements of the landscaping specification.

L. Compaction of Trench Backfill

1. Compaction requirements (see Table 33 05 05.00-1, located at the end of this section).
2. Acceptable Methods
 - a. Flooding or Jetting
 - 1) Provide and purchase water.
 - 2) Equip hose with regulating valve.
 - 3) Furnish 1½-inch minimum diameter hose.
 - 4) Furnish 1½-inch minimum diameter and 4 foot minimum length nozzle.
 - 5) Insert nozzle at maximum spacing of 3 feet.
 - b. Mechanical Compaction
 - 1) Compact initial lift to 2 feet thick.
 - 2) Compact subsequent lifts to 12-inches to 15-inches thick.

- M. Notify ENGINEER and OWNER a minimum of 48 hours prior to commencing work.

END OF SECTION

TABLE 33 05 05.00-1

Excavated Area	Percent Compaction Fine-Grained Soil	Percent Compaction Coarse-Grained Soil	Relative Density *
Within 10' of building lines under footings, floor slabs and structures attached to buildings (i.e., walls, stoops, steps); and the upper 4' or a distance twice the trench width, whichever is greater, of any trench located under any concrete or asphalt paved surfaces.	90%	95%	70%
10' beyond building lines under walks, driveways, curbing, concrete or asphalt paving; sub-grade preparation; and the remaining section of any trench located under these paved surfaces.	80%	90%	60%
10' beyond building lines under seeded, sodded and landscaped areas, and any trench located under these areas.	80%	90%	---

Coarse-grained soils are classified as those soils with more than 50% (by weight) larger than the No. 200 mesh sieve and with a plastic index less than 4.

Compaction requirements maximum density shall be determined by AASHTO Designation T99, Method C, with replacement of the fraction of material retained in the 3/4-inch sieve with No. 4 to 3/4-inch material.

**Minimum relative density requirements apply to coarse-grained soils and apply only in cases where the percentage compaction requirements are not being reached.*

TABLE 33 05 05.00-2

BEDDING MATERIAL FOR SEWERS 18-INCHES IN DIAMETER OR LESS

Crushed pit-run gravel, pea gravel or crushed stone chips shall conform substantially to these grading requirements: (3/8-inch size).	
Sieve Size	Percentage Passing By Weight
1-inch	100
3/4-inch	95-100
3/8-inch	30-55
No. 4	0-10
No. 8	0-5

TABLE 33 05 05.00-3

BEDDING MATERIAL FOR SEWERS LARGER THAN 18-INCHES IN DIAMETER

Crushed pit-run gravel, pea gravel or crushed stone chips shall conform substantially to these grading requirements: (3/4" size).	
Sieve Size	Percentage Passing By Weight
1-inch	100
3/4-inch	95-100
3/8-inch	20-55
No. 4	0-10

TABLE 33 05 05.00-4

BEDDING MATERIAL FOR WATER MAINS & FORCE MAINS

In addition to the bedding material listed in Table 33 05 05.00 – 2 and 33 05 05.00 – 3, the following is acceptable for water mains and force mains:	
Bedding sand shall consist of durable particles ranging in size from fine to coarse in a substantially uniform combination. Unwashed bank-run sand, rejected concrete sand and crushed bank-run gravel will be considered generally acceptable under this specification. The presence of approximately 6% of fine clay or loam particles is desirable, but clay or loam lumps are not permitted. The maximum moisture content shall be 10%. Bedding sand shall conform substantially to these grading requirements:	
Sieve Size	Percentage Passing By Weight
1-inch	100
No. 16	45-80
Material Finer Than No. 200	2-10

TABLE 33 05 05.00-5

REQUIREMENTS FOR SPECIAL BACKFILL

Sieve Size	Percentage Passing By Weight
2-inch	95-100
3/4-inch	70-100
No. 4	35-65
No. 40	15-45
No. 200	5-15

SECTION 33 05 07.13

UTILITY DIRECTIONAL DRILLING

PART 1- GENERAL

1.1. SECTION INCLUDES

- A. Installing underground utilities using the Horizontal Directional Drilling (HDD) method.

1.2. MEASUREMENT PROCEDURES

- A. Measure by distance in linear feet.
- B. Measure through fittings and valves. Include fittings in price of pipe.

1.3. PAYMENT PROCEDURES

- A. Pay per lineal foot.

1.4. REFERENCES

- A. American Water Works Association (AWWA)
 - 1. C605 – Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
 - 2. C651 – Disinfecting Water Mains
- B. North American Society for Trenchless Technology (NASTT) - Horizontal Directional Drilling Good Practices Guidelines

1.5. SYSTEM DESCRIPTION

- A. Consists of drilling a pilot hole, enlarging the pilot hole no larger than 1.5 times the outer diameter of the pull-in pipe, pipe joint, or coupling, and pulling back the pipe through the enlarged hole.

1.6. SUBMITTALS

- A. Submit following items for review a minimum of 10-days prior to commencement of construction.
 - 1. Work plan.
 - 2. Direction boring equipment specifications with spares inventory.
 - 3. Materials specifications.
 - 4. Personnel documentation including training and relevant experience.

5. List of drilling fluid additives and mixtures to be used along with their respective Material Safety Data Sheets.

1.7. CLOSEOUT SUBMITTALS

A. Records

1. Keep records of the following items:
 - a. Daily project log of drilling operation.
 - b. Guidance system log.
 - c. Provide these logs to ENGINEER at project completion.
2. Provide record drawings of completed installation, including:
 - a. Main and fitting locations.

1.8. QUALITY ASSURANCE

- A. Provide Certificates of Compliance from manufacturers for pipe, fittings, hydrants and valves.

1.9. DELIVERY, STORAGE & HANDLING

A. Inspection

1. Inspect pipe and products during delivery.
2. Notify ENGINEER of any cracked, broken or otherwise flawed products.
3. Remove defective products from site and replace with new products.

B. Handling & Storage

1. Do not cut, kink, or otherwise damage pipe during transportation.
2. Unload pipe in accordance with manufacturer's recommendations. Do not drop pipe or fittings into rocky or unprepared ground.
3. Store pipe on level ground, preferably turf or sand, free of sharp objects that could damage the pipe. Limit pipe stacking to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary due to ground conditions, store the pipe on wooden sleepers, spaced suitably and of such width to not allow deformation of the pipe.
4. Handle and store products in accordance with AWWA C-605.

PART 2 - PRODUCTS

2.1. DRILLING SYSTEM

A. Drilling Rig

1. Hydraulically powered system to rotate, push, and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head.
2. Anchor drilling rig to ground.
3. Self-contained hydraulic power system.
4. System to monitor and record maximum pull-back pressure during pull-back operations.
5. Sufficient spare parts for any breakdowns which can be reasonably anticipated.

B. Drill Head

1. Steerable by changing its rotation.
2. Provide the necessary cutting surfaces and boring fluid jets.

C. Mud Motors (if required)

1. Provide adequate power to turn the required drilling tools.

D. Drill Pipe

1. Constructed of high quality 4130 seamless tubing, Grade D or better, with threaded box and pins.
2. Tool joints hardened to 32-36 RC.

2.2. GUIDANCE SYSTEM

- A. Electronic "walkover" tracking system or a Magnetic Guidance System (MGS) probe providing accurate determination of drill head location.
- B. Capable of tracking at depths up to 50 feet and in any soil condition, including rock.
- C. Provides immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction).

2.3. DRILLING FLUID (MUD) SYSTEM

A. Mixing System

1. Self-contained, closed, drilling fluid mixing system of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water, and appropriate additives.
2. Capable of molecularly shearing individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing.
3. Drilling fluid reservoir tank minimum size: 1,000 gallons.
4. Continually agitate drilling fluid during drilling operations.

B. Drilling Fluids

1. Composed of potable water and bentonite clay.
2. Potable Water:
 - a. Clean water.
 - b. pH between 8.5 and 10.
 - 1) Treat water with a lower pH or excessive calcium with the appropriate amount of sodium carbonate or equivalent.
3. Maintain drilling fluid viscosity sufficient to suspend cutting and maintain bore wall integrity.

C. Delivery System

1. Fluid pumping system with a minimum capacity of 35 to 500 gallons per minute capable of delivering the drilling fluid at a constant minimum pressure of 1200 psi.
2. Employ in-line filters on the delivery system to prevent solids from being pumped into the drill pipe.
3. Contain spilled and used drilling fluid. Convey to the drilling fluid recycling system or remove using vacuum trucks or other acceptable method.
4. Construct and maintain a berm (minimum 12-inches high) around drill rigs drilling fluid mixing system, entry and exit pits, and drilling fluid recycling system to prevent spills into the surrounding environment.
5. Furnish pumping equipment and/or vacuum truck(s) of sufficient size to convey drilling fluid from containment areas, to storage and recycling facilities, or disposal.

- D. Other Equipment
 - 1. Pipe Rollers
 - a. Use pipe rollers for pipe assembly during final product pull back.
 - 2. Horizontal Thrust Devices
 - a. Submit request for approval to OWNER for any horizontal thrust device not defined within the specifications.

PART 3 - EXECUTION

3.1. NOTIFICATION

- A. Notify ENGINEER and OWNER a minimum of 48 hours prior to commencing work.

3.2. INSTALLERS

- A. Provide personnel fully trained in their respective duties as part of the directional drilling crew and in safety.
- B. Provide project specific training if any potential hazards may be encountered which have not already been included in personnel's training.

3.3. PREPARATION

A. Site Preparation

- 1. Photograph or video tape entire work area including entry and exit points. Provide one copy to OWNER and one copy to ENGINEER. Keep one copy for a minimum of one year after project close out.

B. Bore Path Survey

- 1. Place entry and exit stakes.
- 2. If using a magnetic guidance system, survey drill path for any surface geo-magnetic variations or anomalies.

C. Environmental Protection

- 1. Place silt fence between drilling operations and any drainage, wetland, waterway, or other area designated for protection by the contract, federal, state, or local regulations.
- 2. Provide berms, liners, turbidity barriers, and other measure necessary to provide any additional environmental protection.

D. Utility Locates

1. Notify all companies with underground utilities in the area.

3.4. INSTALLATION

A. Pilot Hole

1. Drill pilot hole on the bore path with no deviations greater than 5% of depth over the length of the bore. If the pilot deviates more than 5% of depth over the length of the bore, pull back the pilot and re-drill from the location along the bore path before the deviation.
 - a. In the event of a drilling fluid fracture, inadvertent returns, or returns loss during pilot hole drilling operations, stop drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and wait another 30 minutes. If mud fracture or returns loss continues, notify the ENGINEER and OWNER.

B. Reaming

1. Upon successful completion of the pilot hole, ream bore hole to a minimum of 25% greater than the maximum outside diameter of the pipe. Increase the bore hole diameter to accommodate the pullback of the required size of carrier pipe. Determine type of hole opener or back reamer to be used based on the subsurface soil conditions encountered during the pilot hole drilling. Select the proper reamer type with the final hole opening being a maximum of 1.5 times the largest outside diameter pipe system component to be installed.

C. Pull-Back

1. After reaming bore hole to required diameter, pull the pipe through the bore hole. Use swivel in front of pipe. Complete pull-back operation continuously without interruption until pipe is completely pulled into bore hole.
 - a. If the pipe becomes stuck, cease operation to allow any potential hydro-lock to subside. Restart pulling operations. If pipe remains stuck, notify ENGINEER.

D. Stabilizing Bore Hole

1. Stabilize the open bore hole using bentonite drilling slurry pumped through the inside diameter of the drill rod and through opening in the reamer. Use drilling slurry in a homogenous flowable state serving as an agent to carry the loose cuttings to the surface through the annulus of the borehole.
2. Calculate the volume of bentonite mud required for each pull-back based on soil conditions, largest diameter of the pipe system component, capacity of the bentonite mud pump, and the speed of pull-back as recommended by the bentonite drilling fluid manufacturer.

3. Contain the bentonite slurry at the exit or entry side of the directional bore in pits or holding tanks. Recycle this slurry for reuse in the hole opening operation or haul it away to an approved dump site for proper disposal.

E. Pipe Joining

1. Fuse or join pipe sections according to manufacturer's specifications. Install pipe that is free of any chips, scratches, or scrapes.
2. Install 10 gauge tracer wire attached to pipe and capable of withstanding any tensile forces developed during the HDD process such as copper clad steel wire Pro-Trace HDD-CCS.
 - a. Install along entire length of pipe.
 - b. Use wire with insulation color that matches pipe color.
 - c. Splice section of wire using approved splice caps and waterproof seals.

F. Site Restoration

1. Following drilling operations demobilize equipment and restore the work site to the original conditions. Backfill and compact excavations to 95% or original density. Restore surface in-kind.

3.5. FIELD QUALITY CONTROL

A. Perform the following tests upon completion of the system and prior to being placed into service:

1. Pressure & Leakage Test:
 - a. Perform pressure and leakage test in accordance with AWWA C-605.
 - b. Test Pressure: 150 psi.
 - c. Do not allow pressure to vary more than 5 psi during the test.
 - d. Test duration: 2-hours.
 - e. Allowable Leakage:

$$L = \frac{SDP^{0.5}}{148,000}$$

Where: D = Nominal Pipe Diameter In Inches
L = Allowable Leakage in Gallons/Hour
P = Average Test Pressure (psi)
S = Length of Pipe To Be Tested

Allowable leakages are given in Table 33 05 07.13-1, located at the end of this Section.

- f. Use pressure gauge supplied by OWNER.
 - g. Meet leakage requirements for 1,000-foot length of pipe if testing sections longer than 1,00- feet.
 - h. Meter or monitor water usage during test. Pay for water used.
2. Tracer Wire Test:
- a. Conduct a tracer wire test on the completed pipe in the presence of a utility representative.

3.6. DISINFECTION

- A. Disinfect all newly installed water mains, appurtenances and services in accordance with AWWA C-651. If using tablets, refer to Table 33 05 07.13-2 located at the end of this Section, for required dosage.
- B. Flush system within 24-hours after disinfection is completed. Meter or monitor water usage during flushing. Pay for water used.
- C. Obtain water samples at locations to be determined by the ENGINEER and perform test on each sample. Minimum of one (1) test for every 1,000-feet of water main. Obtain two (2) samples if entire project is less than 1,000-feet long.
- D. Re-chlorinate, as required, if any sample tests are positive for coliform.

3.7. REPAIRING LEAKS & BREAKS

- A. Repair any leaks or breaks occurring within correction period.
- B. Re-chlorinate and perform another leakage test on repair areas.

END OF SECTION

TABLE 33 05 07.13 – 1

ALLOWABLE LEAKAGE AT 150 PSI TEST PRESSURE

PIPE LENGTH	6 INCHES	8 INCHES	10 INCHES	12 INCHES	16 INCHES
50-feet	0.02	0.03	0.04	0.05	0.07
100-feet	0.05	0.07	0.08	0.10	0.13
150-feet	0.07	0.10	0.12	0.15	0.20
200-feet	0.10	0.13	0.17	0.20	0.26
250-feet	0.12	0.17	0.21	0.25	0.33
300-feet	0.15	0.20	0.25	0.30	0.40
350-feet	0.17	0.23	0.29	0.35	0.46
400-feet	0.20	0.26	0.33	0.40	0.53
450-feet	0.22	0.30	0.37	0.45	0.60
500-feet	0.25	0.33	0.41	0.50	0.66
550-feet	0.27	0.36	0.45	0.55	0.73
600-feet	0.30	0.40	0.50	0.60	0.79
650-feet	0.32	0.43	0.54	0.65	0.86
700-feet	0.35	0.46	0.58	0.70	0.93
750-feet	0.37	0.50	0.62	0.75	0.99
800-feet	0.40	0.53	0.66	0.80	1.06
900-feet	0.45	0.60	0.74	0.90	1.19
950-feet	0.47	0.63	0.79	0.95	1.26
1,000-feet	0.50	0.66	0.83	1.00	1.32

Leakage shown in gallons per hour.

TABLE 33 05 07.13 - 2

NUMBER OF HYPOCHLORITE TABLETS OF 5 gm REQUIRED FOR DOSE OF 25 Mg/l *

PIPE DIAMETER IN INCHES

LENGTH OF SECTION	4 INCH	6 INCH	8 INCH	10 INCH	12 INCH	16 INCH
≤ 13-feet	1	1	1	2	3	4
18-feet	1	1	2	3	4	6
20-feet	1	1	2	3	4	7
30-feet	1	2	3	4	6	10
40 feet	1	2	4	5	7	13

* Based upon 3-1/4 g available chlorine per tablet.

TABLE 33 05 07.13-3

MINIMUM RESTRAINT LENGTH (FT) ON BOTH SIDES OF THE FITTING

FITTING TYPE / NOMINAL SIZE	6 INCH	8 INCH	12 INCH	16 INCH
11¼° Bend	2	2	3	3
22½° Bend	3	3	5	6
45° Bend	5	6	9	11
90° Bend	11	15	21	27
Dead End	30	40	56	73
Top Site of a Vertical Offset	13	17	24	31
Tee Run x Branch 6" BY	14			
Tee Run x Branch 8" BY	10	24		
Tee Run x Branch 12" BY	1	15	40	
Tee Run x Branch 16" BY	1	7	33	56

TABLE 33 05 07.13-4

OUNCES OF CALCIUM HYPOCHLORITE TABLETS TO BE PLACED AT THE BEGINNING OF MAIN AND AT EACH 500-FT INTERVAL

4 INCH	6 INCH	8 INCH	10 INCH	12 INCH	14 INCH & LARGER
1.7	3.8	6.7	10.5	15.1	D ² X 15.1

Where D is the inside pipe diameter in feet D = d/12.

SECTION 33 42 11.00

STORM SEWERAGE

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Storm sewer, manholes, endwalls, inlets, catch basins, cleanouts, fittings and accessories.

1.2. MEASUREMENT PROCEDURES

A. Storm Sewer Main

1. Measure by distance in lineal feet.
2. Measure from centerline of manhole to centerline of manhole or end of pipe size specified.
3. Do not measure through end sections.

B. Manholes

1. Measure by height (vertical distance) in vertical feet.
2. Measure from invert (flow line) of lowest outgoing pipe to top of manhole casting.

C. Inlet and Catch Basin Leads

1. Measure by distance in lineal feet.
2. Measure from centerline of manhole to centerline of inlet (catch basin) or from centerline of inlet (catch basin) to centerline of inlet (catch basin).

D. Storm Sewer Laterals

1. Measure by distance in lineal feet.
2. Measure from outer wall of storm sewer main to end of storm sewer lateral.

E. Endwalls & Outfall Structures

1. Measure on an each basis.

F. Inlets & Catch Basins

1. Measure on an each basis.
2. Include structure, adjusting rings and casting as one unit.

G. Cleanouts

1. Measure on an each basis.
2. Include wye, bends and cleanout cover as one unit.

1.3. REFERENCES

A. American Association of State Highway Transportation Officials (AASHTO)

1. M36 – Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains
2. M167 – Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Aches and Arches
3. M190 – Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe-Arches
4. M198 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
5. M294 – Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500-mm (12- to 60-in.) Diameter

B. ASTM International (ASTM)

1. C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
2. C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
3. C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections
4. C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
5. C655 - Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
6. D471 - Standard Test Method for Rubber Property - Effect of Liquids
7. D1784 - Standard Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride)(PVC) Compounds and Chlorinated Poly(Vinyl Chloride)(CPVC) Compounds
8. D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

9. D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride)(PVC) Sewer Pipe and Fittings
10. D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
11. D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material
12. F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
13. F679 - Standard Specification for Poly(Vinyl Chloride)(PVC) Large-Diameter Plastic Gravity Flow Sewer Pipe and Fittings
14. F794 - Standard Specification for Poly(Vinyl Chloride)(PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter
15. F949 - Standard Specification for Poly(Vinyl Chloride)(PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings
16. F2881 – Standard Specification for 12 to 60 In. [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications
17. F3219 – Standard Specification for 3 to 30 in. (75 to 750 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Fittings

1.4. SHOP DRAWINGS

- A. Supply shop drawings for manholes, catch basins, inlets, endwalls, castings, lateral connections and all other appurtenances.
 1. Submit a minimum of four (4) sets of shop drawings.

1.5. QUALITY ASSURANCE / CONTROL SUBMITTALS

- A. Submit manufacturer's test report.
- B. Submit Certificate of Conformance signed by authorized agent of the manufacturer or supplier.

1.6. CLOSEOUT SUBMITTALS

- A. Record Drawings
 1. Submit one (1) set of record drawings to ENGINEER at completion of project.
 2. Prepare record drawings by marking up a set of drawings showing all changes from the original drawings.

3. Show underground exterior sewers, underground interior sewers, gas lines, water lines, electrical conduit, telephone cable, and any other underground facilities encountered during construction.
4. Keep record drawings in a clean location during construction.
5. Show the following measurements on the record drawings:
 - a. Length between manholes, based upon center of castings.
 - b. Manhole depths, rim to invert, and any other pipe elevations within the manhole.
 - c. Length of lateral, measured horizontally from the outer wall of the sewer main to the end of the lateral pipe.
 - d. Lateral location, measured from center of downstream manhole to wye or tee.
 - e. Length of riser, measured from the outer wall of the sewer main to the bend point.
 - f. Depth of lateral at the property line, measured from the top of the pipe to the ground elevation (preferably sidewalk or curb).
 - g. Inlet locations, station, and offset.
 - h. Inlet lead length, based upon center of castings.

1.7. DELIVERY, STORAGE & HANDLING

A. Receiving & Storing Pipe & Accessories

1. Check all pipe and accessories for loss or damage in transit when received from the carrier and at the time of unloading.
2. Check all pipe for proper identification markings as required for the specific material and that the pipe and accessories delivered to the site meet the appropriate material specifications.
3. Reject delivered pipe and accessories until Items 1. and 2. (above) have been satisfied.
4. Store pipe and accessories in accordance with the storage requirements and recommendations of the manufacturer.
5. Unload and distribute pipe and accessories using adequate and proper equipment so as not to damage the material.
6. Remove material not meeting specifications or found to have cracks, flaws or other defects by the CONTRACTOR, ENGINEER or OWNER.

PART 2 - PRODUCTS

2.1. MATERIALS - SEWER PIPE

A. Polyvinyl Chloride (PVC) SDR Pipe SDR 35 & Fittings

1. Conform To:
 - a. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride)(PVC) Sewer Pipe and Fittings
 - b. ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - c. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
2. Deliver pipe and fittings marked as follows (pipe marked every 5 feet or less):
 - a. Manufacturer's name or trademark.
 - b. Nominal pipe size.
 - c. The PVC cell classification, e.g., 12454.
 - d. The legend "SDR-35 PVC Sewer Pipe".
 - e. ASTM Designation D3034.
3. Deliver all pipe and fittings on any one (1) project from one (1) manufacturer.
4. Acceptable Pipe Sizes: 4-inch through 15-inch.

B. High Density Polyethylene (HDPE) Corrugated Pipe

1. Conform To:
 - a. AASHTO M294 - Corrugated Polyethylene Pipe, 300 to 1500-mm (12 to 60 inch) Diameter
 - b. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material Resin Cell Classification 33543OC
2. Deliver pipe and fittings marked as follows (pipe marked every 5 feet or less):
 - a. Manufacturer's name or trademark.
 - b. Nominal pipe size.
 - c. Plant designation code.

- d. AASHTO Designation M294.
 - e. Date of manufacture or an appropriate Code.
 - 3. Deliver all pipe and fittings on any one (1) project from one (1) manufacturer.
 - 4. Acceptable pipe sizes: 12-inch through 24-inch.
 - 5. Type S pipe with outer corrugated pipe wall and a smooth inner liner.
- C. Reinforced Concrete Pipe
 - 1. Conform To:
 - a. ASTM C76 - Standard Specification for 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 C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
 - d. ASTM C655 - Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
 - e. ASTM D471 - Standard Test Method for Rubber Property - Effect of Liquids
 - 2. Deliver pipe and fittings marked as follows (pipe marked every 5 feet or less):
 - a. Class of pipe.
 - b. Nominal pipe size.
 - c. Date of manufacture.
 - d. Name or trademark of the manufacturer.
 - 3. Deliver all pipe and fittings on any one (1) project from one (1) manufacturer.
 - 4. Acceptable Pipe Sizes: All sizes.
 - 5. Acceptable Pipe Classes: Class III or greater.
 - 6. Cure pipe no less than 7-days prior to incorporation into the work.
 - 7. Joints:
 - a. Rubber O-ring type gaskets conforming to the requirements of ASTM C443.

8. Fittings & Connections:
 - a. Precast fittings unless otherwise specified in the Special Provisions.
9. Inspection & Rejection:
 - a. Inspect pipe at the job site. ENGINEER may also inspect pipe.
 - b. Reject Pipe Due to Any of the Following:
 - 1) Variations in any dimensions exceeding that allowed in the ASTM standard.
 - 2) For bell and spigot pipe, fractures or cracks passing through the barrel or socket, except that a single crack not exceeding 2-inches in length at either end of pipe or a single fracture in the socket not exceeding 3-inches in width nor 2-inches in length shall not be considered cause for rejection unless these defects exist in more than 5% of the entire shipment or delivery. For tongue and groove pipe, fractures or cracks through the barrel except for a single crack that does not exceed the depth of the joint and can be effectively sealed.
 - 3) Blisters where the surface is broken or which project more than 1/8-inch above the surface.
 - 4) Defects that indicate imperfect proportioning, mixing and molding.
 - 5) Surface defects indicating honeycombing or open texture.
 - 6) Cracks sufficient to impair the strength, durability or serviceability of the pipe.
 - 7) Damaged ends, where such damage would prevent making a satisfactory joint.
 - 8) Variation of more than 1/8-inch per lineal foot in alignment of pipe intended to be straight.
 - 9) Failure to give a clear ringing sound when placed on end and dry-tapped with a light hammer.
 - 10) Insecure attachment of spurs on branches and fittings.
 - 11) The complete absence of distinct web-like markings from the external surface of the pipe made by any process in which the forms are removed immediately after the concrete has been placed, which is indicative of a deficiency of water in the concrete mix, unless all specimens submitted for test that do not have such

web-like markings have passed the physical tests required by the specifications.

- c. Stamp rejected pipe "Rejected".
- d. Do not deface or otherwise damage pipe.
- e. Replace all rejected pipe with pipe that conforms to ASTM Standards at no expense to OWNER.

2.2. MANHOLES

A. Conform To

- 1. AASHTO M198 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
- 2. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- 3. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections

B. Precast Manhole Sections

- 1. Base Section:
 - a. Integrally cast bottom and barrel section.
 - b. Factory manufactured or field constructed invert.
 - c. Appropriate opening sizes to accept sewer pipes.
- 2. Acceptable Joints and Gaskets:
 - a. Rubber gaskets conforming to ASTM C433.
 - b. An approved butyl joint sealant meeting the requirements of AASHTO M198.
 - c. Reject gaskets, if they show surface checking, weathering or other deterioration prior to installation.
- 3. Acceptable Manhole Steps:
 - a. Specified on the Contract Drawings or in Special Provisions.

C. Acceptable Adjusting Rings

- 1. Cast iron.

2. Expanded Polypropylene (EPP).

3. Precast concrete.

4. Rubber.

D. Inspection & Rejection

1. Inspect manhole sections and cones upon arrival at job site.

2. Reject Manhole Sections & Cones for Any of the Following Reasons:

a. Fracture or cracks passing through the wall, except for a single end crack that does not exceed the depth of the joint.

b. Defects that indicate imperfect proportioning, mixing and molding.

c. Surface defects indicating honeycombed or open texture.

d. Damaged ends, where such damage would prevent making a satisfactory joint.

e. Manhole steps out of line or not properly spaced.

f. Internal diameter of the manhole section varying more than 1% from the nominal diameter.

g. Any continuous crack having a surface width of 0.01-inch or more and extending for a length of 12-inches or more, regardless of position in the section wall.

E. Manhole Castings

1. Furnish manhole casting type specified in the detail drawings or in the Special Provisions.

F. Pipe to Manhole Connections

1. Flexible pipe to manhole connections are not required.

2. Water stops required on all plastic pipe.

2.3. CATCH BASINS & INLETS

A. Definitions

1. Inlet: A stormwater inlet of precast construction without a sump.

2. Catch Basin: A stormwater inlet of precast construction having a sump.

3. The detail and size of the inlet or catch basin are specified on the Contract Drawings or Special Provisions.
- B. Base and Riser Sections
1. Reinforced Concrete
 2. Integrally cast bottom and barrel section.
 3. Factory manufactured or field constructed invert.
 4. Appropriate opening sizes to accept sewer pipes.
- C. Acceptable Joints and Gaskets
1. Rubber gaskets conforming to ASTM C433.
 2. An approved butyl joint sealant meeting the requirements of AASHTO M198.
 3. Reject gaskets, if they show surface checking, weathering or other deterioration prior to installation.
- D. Pipe to Catch Basin/Inlet Connections
1. Flexible pipe to manhole connections are not required.
 2. Water stops required on all plastic pipe.
- 2.4. SEWER SERVICE LATERALS
- A. Connections to New Sewers
1. Connect using in-line wyes or tees factory fabricated of the same material as the sewer main.
 2. Provide wyes with the proper bend to permit laying of the lateral at right (90°) angles to the sewer main.
- B. Connections to Existing Sewers
1. PVC Sewer Main:
 - a. PVC water-proof saddles of the same pipe composition and brand as the existing sewer main.
 - b. Provide stainless steel bands on each side of the saddle.
 2. Concrete, Asbestos Cement or Vitrified Clay Sewer Main:
 - a. Saddle Connection:

- 1) Cast iron or aluminum saddles.
- 2) Provide stainless steel bands on each side of the saddle.
- b. Rubber Boot Connection:
 - 1) Conform to ASTM C443.
 - 2) Submit a shop drawing of the connection materials prior to installation.
3. Other Materials Main:
 - a. Submit the proposed fitting material to be used for lateral connections the ENGINEER for review prior to installation.
- C. Lateral Pipe and Fittings
 1. Conform to Section 2.1, Materials - Sewer Pipe.

2.5. ENDWALLS

- A. Acceptable Materials
 1. Galvanized aluminum or steel with gauge conforming to Table 33 42 11.00-1 or Table 33 42 11.00-2 at end of this section.
 2. Reinforced concrete.

PART 3 - EXECUTION

3.1. INSTALLATION - SEWER PIPE

- A. General Requirements
 1. Related Section:
 - a. Section 33 05 05.00 – Buried Piping Installation
 2. References:
 - a. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
 3. Lower all pipe, fittings and accessories into the trench in such a manner as to prevent damage to the materials.
 4. Do not drop or dump materials into the trench. Clean foreign matter or dirt from within the pipe before installation.

5. Install pipe to uniform line and grade. Reject work with noticeable variations from true alignment and grade. Insert pipe to ensure that the entering pipe is forced tightly against the last pipe installed. Hold pipe firmly in place while backfill is being placed around the pipe in order to ensure against any movement from true alignment or grade.
6. Install pipe starting at the lowest point in the proposed sewer line. Install pipe with the bell end of the bell and spigot pipe or with the receiving groove end of tongue and groove pipe pointing upgrade. Install pipe so that each pipe rests upon the full length of its barrel with holes excavated to accommodate bells where bell and spigot are used.
7. Heat the pipe and jointing materials so as to prevent freezing of the joint. Do not install pipe on frozen ground.
8. Install sewer pipe, including laterals, (except reinforced concrete pipe) using Class B bedding. Install reinforced concrete pipe using Class C bedding. Install other bedding types as specified in the Contract Drawings and Specifications and meet the requirements set forth in Section 33 05 05.00 – Buried Piping Installation.

B. Class B Bedding

1. Excavate trench to allow 4-inches of bedding material under the pipe barrel and 3-inches of bedding material under the bell.
2. Place and compact bedding material to a level 12-inches above the top of the pipe.
3. Acceptable bedding material is shown in Tables 33 42 11.00-2 and 33 42 11.00-3.

C. Class C Bedding

1. Excavate trench to allow 4-inches of bedding material under the pipe barrel and 3-inches of bedding material under the bell.
2. Place and compact bedding material to springline of the pipe.
3. Place and compact excavated material to a point 2-feet above the top of the pipe.
4. Acceptable bedding material is shown in Tables 33 42 11.00-3 and 33 42 11.00-4.

D. Other Bedding

1. Refer to Section 33 05 05.00 – Buried Piping Installation for other bedding and backfill requirements.

E. Connections to New Sewers

1. Install wye or tee branches for service connections at locations directed by the OWNER or ENGINEER.

2. Do not connect sewer service to a manhole without written approval of the OWNER or ENGINEER.
- F. Connections to Existing PolyVinyl Chloride (PVC), High Density Polyethylene (HDPE), or Polypropylene Main
1. OWNER will furnish location information of existing tee or wye. Connect lateral at this location.
 2. Cut-in Wye or tee on an existing sewer main.
 3. Install saddles of the same pipe composition and brand as the sewer main.
 4. Place saddle in the correct position on the pipe and scribe a line marking a saddle opening. Cut hole outlined on the pipe shall using a keyhole or saber saw. Remove disc cut from the pipe from the main sewer. Clean and dry both the bottom surface of the saddle and the mating area on the pipe with a clean cloth dampened with methyl ethyl ketone (MEK) and solvent cement brushed liberally on both mating surfaces. Place saddle over the hole in the pipe and drawn down firmly with a stainless steel strap on each side of the saddle.
- G. Connections to Existing Concrete, Asbestos Cement, or Vitrified Clay Main
1. Cut a circular hole into the main sewer using a mechanically-powered hollow cylindrical bit. Install a cast iron or aluminum saddle centered in the cored hole and secured to the pipe with an epoxy adhesive compatible with the materials. If the saddle cannot be adequately secured to the pipe, strap it to the pipe with stainless steel bands. Do not extend saddle beyond the inner diameter of the sewer main. Connect sewer service lateral to the saddle with an approved flexible waterproof connector secured to each pipe end with stainless steel bands. Backfill and compact the area around the connection with bedding material.
 2. The ENGINEER or OWNER must approve other methods of sewer service connection in writing.
- H. Lateral Services
1. Install lateral at uniform grade from the sewer main to the property line. Terminate at a minimum depth of 3 feet below finish grade. Laterals installed with less than 3 feet of cover shall require the approval of the ENGINEER. Install lateral at a grade of not less than 0.01 ft./ft. (1%) and not more than 0.02 ft./ft. (2%) unless otherwise specified on the Contract Drawings and Specifications.
 2. Mark the end of the sewer lateral with a 2-foot length of 2-inch by 4-inch lumber.
 3. Install tracer wire from main to end of lateral. Attach to pipe a minimum of three (3) times for each pipe length.
 - a. Acceptable Wire:
 - 1) #10 AWG copper or #12 AWG copper clad steel.

- 2) High Density Polyethylene (HDPE) or High Molecular Weight Polyethylene (HMWPE) jacket.
- 3) Green jacket color.

3.2. MANHOLES

A. General Requirements

1. Excavate to the size required for the manhole to be constructed with sheathing and bracing as necessary to protect the workers and prevent loss of ground.
2. Increase or decrease the depth of the manhole as required to meet the requirements of the site conditions as determined by OWNER or ENGINEER.

B. Manhole Castings

1. Set manhole casting at the elevation given on the Contract Drawings. The OWNER or ENGINEER may adjust the casting elevation to match field conditions.
2. Provide adjusting rings between the casting and the precast manhole section, but not more than 9-inches of adjusting rings.

C. Bedding

1. Place precast reinforced base on a 6-inch or thicker bed of uniformly compacted material conforming to Table 33 42 11.00-4.

D. Backfill

1. Place and compact backfill material conforming to Table 33 42 11.00-4 in no greater than 8-inch lifts.

E. Connections to Existing Manholes or Existing Sewers

1. Cut a new connection to an existing manhole or sewer structure where there is no connection. Cut a neat hole in the wall of the manhole. Shape the bottom of the manhole to fit the invert of the connection. Insert a length of sewer pipe through the opening. Fill around the pipe with a 1:2 cement mortar. Trowel the cement mortar inside and outside of the manhole to a neat finish.
2. Connect to an existing sewer or manhole connection stub with the same type of material and the same type of joint as the connection stub. No adapter will be accepted. If the pipe materials and/or the joints differ, replace existing connection stub with a new connection stub of the same type of material and joint as the new sewer to be extended.
3. Include the cost for connection to an existing manhole or existing sewer in the unit price bid for the sewer main, unless otherwise specified in the Contract.

3.3. CATCH BASINS & INLETS

- A. Excavate for the catch basin or storm inlet to the size required for the structure to be constructed.
- B. Increase or decrease the depth of the catch basin or inlet as required to meet the requirements of the site conditions as determined by OWNER or ENGINEER.
- C. Set casting at the elevation given on the Contract Drawings. The OWNER or ENGINEER may adjust the casting elevation to match field conditions.
- D. Provide adjusting rings between the casting and the catch basin or inlet, but not more than 9-inches of adjusting rings.
- E. Bedding
 - 1. Place catch basin or inlet base on a 6-inch or thicker bed of uniformly compacted material conforming to Table 33 42 11.00-4.
- F. Backfill
 - 1. Place and compact backfill material conforming to Table 33 42 11.00-4 in no greater than 8-inch lifts.

3.4. CONSTRUCTION TOLERANCES

- A. Verify catch basin, inlet, and manhole invert elevations. Inform OWNER and ENGINEER of any elevations that vary more than 0.10 feet from plan elevations.
- B. Reset catch basin, inlet, and/or manhole if invert elevations vary more than 0.10 feet from plan elevation at CONTRACTOR's expense. OWNER may waive this requirement.
- C. If catch basin / inlet invert elevations are within 0.10 feet but catch basin / inlet lead is back pitched, reset catch basin / inlet and/or replace catch basin / inlet lead to obtain positive slope at CONTRACTOR's expense.

3.5. FIELD QUALITY CONTROL

- A. Testing
 - 1. General:
 - a. Required Tests:
 - 1) Infiltration
 - a) Low pressure air test (36-inch diameter and smaller)
 - b) Water infiltration test (larger than 36-inch diameter)

- (1) Conduct water infiltration test only if directed by ENGINEER or OWNER.
 - 2) Deflection Test
 - a) Not required on concrete pipe.
 - 3) Televising
 - b. Perform tests with a representative of OWNER or ENGINEER present.
2. Low Pressure Air Test:
- a. Perform in accordance with ASTM F1417.
 - b. Do not include laterals in allowable time calculation.
 - c. Perform test after storm sewers and laterals have been installed, backfilled, and cleaned.
 - d. Use Time-Pressure Drop Method of Test:
 - 1) Isolate the section of sewer to be tested by inflatable stoppers or other suitable test plugs.
 - 2) Plug or cap the ends of all branches, laterals, tees, wyes, and stubs to be included in the test. Brace these to prevent blow-out. Install one plug or tap with an inlet tap to allow connecting a hose to a portable air control source.
 - 3) Determine the height of ground water above the invert at each end of the test section. Compute the average. Increase the gage test pressure by 0.43 pounds per square inch for every foot the ground water is above the test section.
 - 4) Connect the air hose to the inlet tap and portable air control source. Provide air equipment with necessary valves and pressure gages to control an oil-free air source and the rate at which air flows into the test section to enable monitoring of the air pressure within the test section. Provide pressure relief device to prevent the possibility of loading the test section with the full capacity of the compressor.
 - 5) Add air slowly to the test section until the pressure inside the pipe reaches 4.0 psig.
 - 6) After the pressure of 4.0 psig is obtained, regulate the air supply so that the pressure is maintained between 3.5 to 4.0 psig for at least 2 minutes. The air pressure should stabilize in equilibrium with the temperature of the pipe walls. The pressure will normally drop slightly until equilibrium is obtained. A minimum of 3.5 psig

is required. During this time, check all plugs with a soap solution to detect any plug leakage.

- 7) Disconnect the air supply and decrease the pressure to 3.5 psi. Measure the time required for the pressure to drop from 3.5 psi to 2.5 psi. If the measured time is equal to or greater than the time listed in Table 33 30 00.00-1, the pipe line passes the test.
- 8) Record test results. Include test date and signature of test supervisor.
- 9) Open the bleeder valve and allow air to escape. Do not allow in trench or manhole while pipe is decompressing. Remove plugs once all air pressure in the test section has been released.

3. Water Infiltration Test:

- a. Ground water level must be a minimum of 2 feet above the top of the pipe being tested. CONTRACTOR may flood trench, at no cost to the OWNER, to simulate this condition. Determine ground water elevation by attaching a transparent plastic tube to the provide pipe nipple in the manhole and using the plastic tube as a manometer.
- b. Set a measured weir in the invert of a key manhole.
- c. The allowable infiltration rate is 25 gallons/day/inch diameter/mile of sewer. The allowable infiltration rate between any two adjacent manholes shall not exceed 200% of the allowable infiltration rate.

4. Deflection Testing (PVC and Other Flexible Thermoplastic Pipe):

- a. Perform test after sewer mains have been backfilled but prior to paving.
- b. Use rigidly constructed cylinder or other approved shape that will not change shape or size when subjected to forces exerted on it by the pipe wall.
- c. Use testing device that is 95% of the sewer line inside diameter if tested within 30-days of installation and 92.5% if tested after 30-days of installation.
- d. Pull device through by hand without using excessive force. This is a successful test.
- e. Repair sections that do not pass test using a method approved by the ENGINEER and OWNER.
- f. Retest repaired sections.

5. Televising:
 - a. Televising after infiltration testing and deflection testing have successfully passed.
 - b. Televising storm sewer mains and laterals.
 - c. Deliverables:
 - 1) Written Report
 - 2) DVD or flash drive.
 - d. Include the following information in the deliverables:
 - 1) Starting and ending manhole numbers.
 - 2) Pipe size and material being televised.
 - 3) Location of laterals measured from downstream manhole.
 - 4) Length of main and laterals.

3.6. CLEANING

A. Final Inspection

1. Clean every sewer, manhole, catch basin, inlet, or other accessory prior to final inspection.
2. Remove all lumps of cement, protruding gaskets, rubbish and improper objects. Flush any sewer main containing sand, gravel, clay or foreign materials. Pay for the water used for flushing.
3. Flush any sewer main containing sand, gravel, clay, or foreign materials. Pay for water used in flushing.
4. Perform final walk through with representative of CONTRACTOR, OWNER, and ENGINEER.

END OF SECTION

TABLE 33 42 11.00-1

CORRUGATED METAL PIPE DIMENSIONS & GAUGES

NOMINAL DIAMETER	MINIMUM GAUGE NO.	SHEET THICKNESS	AREA
6-Inches	18	0.052-Inch	0.20 Sq. Ft.
8-Inches	16	0.064-Inch	0.35 Sq. Ft.
10-Inches	16	0.064-Inch	0.55 sq. Ft.
12-Inches	16	0.064-Inch	0.79 Sq. Ft.
15-Inches	16	0.064-Inch	1.23 Sq. Ft.
18-Inches	16	0.064-Inch	1.77 Sq. Ft.
21-Inches	16	0.064-Inch	2.41 Sq. Ft.
24-Inches	14	0.079-Inch	3.14 Sq. Ft.
30-Inches	14	0.079-Inch	4.91 Sq. Ft.
36-Inches	12	0.109-Inch	7.07 Sq. Ft.
42-Inches	12	0.109-Inch	9.62 Sq. Ft.
48-Inches	12	0.109-Inch	12.57 Sq. Ft.
54-Inches	12	0.109-Inch	15.90 Sq. Ft.
60-Inches	10	0.138-Inch	19.64 Sq. Ft.

Do not vary the average inside diameter of circular pipe more than $\pm 1/2$ -inch or 1%; whichever is greater, from the nominal diameter.

TABLE 33 42 11.00-2

CORRUGATED METAL PIPE ARCH DIMENSIONS & GAUGES

PIPE ARCH SIZE	EQUIVALENT DIAMETER	SPAN	RISE	MINIMUM GAUGE NO.	SHEET THICKNESS	AREA
14 x 9 Inch	12-Inches	14-Inch	9-Inch	16	0.064-Inch	1.1 Sq. Ft.
17 x 13 Inches	15-Inches	17-Inch	13-Inch	16	0.064-Inch	1.1 Sq. Ft.
21 x 15 Inches	18-Inches	21-Inch	15-Inch	16	0.064-Inch	1.5 Sq. Ft.
24 x 18 Inches	21-Inches	24-Inch	18-Inch	16	0.064-Inch	2.2 Sq. Ft.
28 x 20 Inches	24-Inches	28-Inch	20-Inch	14	0.079-Inch	2.8 Sq. Ft.
35 x 24-Inches	30-Inches	35-Inch	24-Inch	14	0.079-Inch	4.4 Sq. Ft.
42 x 29-Inches	36-Inches	42-Inch	29-Inch	12	0.109-Inch	6.4 Sq. Ft.
49 x 33-Inches	42-Inches	49-Inch	33-Inch	12	0.109-Inch	8.7 Sq. Ft.
57 x 38-Inches	48-Inches	57-Inch	38-Inch	12	0.109-Inch	11.4 Sq. Ft.
64 x 43-Inches	54-Inches	64-Inch	43-Inch	12	0.109-Inch	14.3 Sq. Ft.
71 x 47-Inches	60-Inches	71-Inch	47-Inch	10	0.138-Inch	17.6 Sq. Ft.

Do not vary the span and rise dimensions more than ± 1 -inch or 2% of the equivalent circular diameter, whichever is greater. Fabricate connecting lengths of pipe to form a butt with a tolerance of $1/4$ inch. When the joint opening between two (2) coupled pipes exceeds $1/4$ -inch, fill this entire space with an approved bituminous filler material.

TABLE 33 42 11.00-3

BEDDING MATERIAL FOR CULVERTS 18-INCHES IN DIAMETER OR LESS

Crushed pit run gravel, pea gravel or crushed stone chips conforming to these grading requirements: (3/8-inch size).

SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
1-Inch	100
¾-Inch	95-100
3/8-Inch	30-55
No. 4	0-10
No. 8	0-5

TABLE 33 42 11.00-4

BEDDING MATERIAL FOR CULVERTS LARGER THAN 18-INCHES IN DIAMETER

Crushed pit run gravel, pea gravel or crushed stone chips conforming to these grading requirements: (¾-inch size).

SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
1-Inch	100
¾-Inch	95-100
3/8-Inch	20-55
No. 4	0-10

SPECIAL PROVISIONS

PAPERMAKER STORMWATER MANAGEMENT POND

For The VILLAGE OF KIMBERLY OUTAGAMIE COUNTY, WISCONSIN

March 31, 2025
McM. No. K0001-09-25-00156

I. SCHEDULES

- A. Prior to start of any work, the CONTRACTOR shall submit for approval by the OWNER, a detailed Construction Schedule of all the work to be performed. The Prime CONTRACTOR shall be responsible to schedule work to be done by their sub-contractors and place them on this schedule. The schedule shall be, at least, weekly; and include the number of crews, location of work for each crew, sequence of moves and other pertinent information. The schedule shall provide for a continuous work schedule on the project with no activity gaps. Upon acceptance of the schedule, work is expected to progress in a timely and orderly fashion in accordance with the accepted schedule. Deviations in the schedule are subject to acceptance by the OWNER. Anytime gaps of non-work activity which occur due to CONTRACTOR scheduling, shall be subject to liquidated damages at the discretion of the OWNER.
- B. Construction operations shall not begin until the swim lake is closed for the season. Equipment mobilization prior to swim lake closure is acceptable.

II. GENERAL

- A. EROSION CONTROLS
 - 1. The CONTRACTOR shall comply with the Erosion and Sediment Control Plan included within the plan set and the Wisconsin DNR Construction Site Stormwater Runoff Permit. Erosion control Best Management Practices (BMPs) shall be installed in accordance with Wisconsin DNR Technical Standards and the details included within the construction plan set. If the CONTRACTOR elects to deviate from the approved Erosion and Sediment Control Plan, the CONTRACTOR is responsible for amending the plan and obtaining Wisconsin DNR approval. If an Erosion Control Non-Conformance letter is issued by the Wisconsin DNR, it shall be handled solely by the CONTRACTOR, including submittals to the Wisconsin DNR specialist.
 - 2. The cost for furnishing, installing, inspecting, maintaining, repairing, replacing, removing, and disposing of erosion control BMPs shall be included in the unit price bid for each erosion control BMP. CONTRACTOR shall remove erosion and

SPECIAL PROVISIONS

sediment controls after construction is complete and a vegetation density of at least 70% is attained. Erosion and sediment controls without a bid item shall be incidental to the Project.

3. E-Mat shall be Excel SR-1 Rapid Go or approved equal.

B. DEWATERING

1. Dewatering shall meet all required stormwater BMP's prior to discharging and shall conform to Wisconsin DNR Technical Standard 1061. Dewatering will include all work necessary for pumping, settling, treating, and discharging water; for any permit fees required; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work. CONTRACTOR shall be responsible for obtaining all necessary dewatering permits if dewatering rate is anticipated to exceed 70 gpm.
2. As part of the Erosion and Sediment Control Plan, the CONTRACTOR shall implement dust control on the site at all times and provide temporary stabilization of exposed soils that will not be active for fourteen (14) days or more. Polyacrylamide, mulching, seeding, or some combination of the three (3) may be used to temporarily stabilize exposed soils. The CONTRACTOR is responsible for selecting the type of temporary stabilization after considering the construction schedule and site conditions. Any temporary seeding that does not have a specific bid item is considered incidental to the contract.
3. The CONTRACTOR is responsible for clearing and grubbing the site as needed to construct all work covered in the pond area. A lump sum bid item is included for this work and shall include any remaining clearing, grubbing and removal of material from the site. Material to be removed from the site includes all items shown for removal on the demolition plan not intended for reuse on the site.

C. POND CONSTRUCTION

1. Temporary bulkheading of the existing 30-inch pond influent pipe. The CONTRACTOR shall install an inflatable 30-inch plug or other device (approved by the Village) on the downstream side of the storm manhole in Sunset Drive. The existing line on Sunset currently has two outfalls to the Fox River that can remain functioning during pond construction
2. Common Excavation
 - a. Common excavation quantities shown in the bid tabulation shall be the final payment quantity to the CONTRACTOR. These quantities do not include the excavation and/or spoils volumes from any utility trenches, rip-rap areas, etc.
 - b. Common excavation includes all aboveground spoils, removal of abandoned pipe and manholes.

- c. The estimated amount of unclassified excavation is noted on the site grading plan sheet. This does not include the importing of the 6-inch topsoil required for prairie planting. No excavated material is expected to leave the site as a balance of excavation and fill placement is designed.
 - d. Cleared and grubbed material along with other removals noted on the demolition sheet shall be required to be hauled offsite and not placed in filling areas of the site.
 - e. Some of the excavated material is anticipated to contain some curb and gutter, asphalt /concrete material. This was material from water breaks hauled in and placed by the Village. Poor quality fill material shall be placed at the bottom of the fill area shown on the plan. This material shall be evenly distributed and covered a minimum of 6' below finish grade.
 - f. The sand fill area shown within the swim lake area shall be filled with salvaged clean sand material from the portion of the swim beach being filled as part of this project. The voided area where sand was salvaged shall be filled as part of the pond excavation earthwork.
- 3. Sub-grade elevation checks will be required after final rough grading prior to final topsoil placement. CONTRACTOR shall provide ENGINEER and / or OWNER a two (2) day notice prior to placing topsoil in order for sub-grade elevation checks to be scheduled and conducted. The CONTRACTOR may be required to dewater the deep portions of the pond in order to conduct the sub-grade elevation checks. The cost of any dewatering anticipated should be included in the lump sum price bid.
 - 4. CONTRACTOR shall construct the Papermaker Pond in accordance with the Geotechnical Engineering Services Report found in Section 00 31 32.00. The CONTRACTOR shall install a clay liner if sandy, silty, or poor soils are encountered within the clay liner limits identified within the construction plans. The ENGINEER and CONTRACTOR shall jointly measure the size of the sandy, silty, or poor soils prior to installation of the clay liner. The cost to excavate native soils, dispose of native soils, import soil for the 24-inch clay liner, and install the 24-inch clay liner shall be included in the unit price bid. The CONTRACTOR shall provide a two (2) year warranty or correction period for the clay liner. An estimated undistributed quantity of 24-inch clay liner has been used for bidding purposes. Actual usage shall be field documented and paid at the unit price bid.
 - 5. A Geotechnical Engineer shall be onsite during the placement of the clay liner to perform observation, testing and evaluation of the placement of the liner to ensure proper installation. The CONTRACTOR shall provide ENGINEER and/or OWNER with documentation of material testing and a letter of opinion from a Geotechnical Engineer, registered in the State of Wisconsin, that the clay liner specifications are satisfied. The cost of the Geotechnical Engineer/Letter of Opinion shall be included in the lump sum price bid.
 - 6. As identified in the Geotechnical Engineering Services Report, dewatering may be required for the Project. The CONTRACTOR shall determine the extent of dewatering needed for the Project after examining the site, Report of Geotechnical Exploration, and other relevant information. Any dewatering shall be completed

SPECIAL PROVISIONS

in accordance with Wisconsin DNR Technical Standard 1061 with the cost being considered incidental to the Contract.

III. STORM SEWER WORK ON SUNSET DRIVE

A. STORM MANHOLE 90 WORK

Pictures at the end of this section show the existing condition of Storm Manhole 90. The proposed condition was originally constructed but was changed during construction in 2023. Upon completion of the pond, the proposed connection shall be completed. This change involves re-instating the upper hole in Manhole 90 and bulkheading the lower hole. The proposed piping allows discharge in the NW 12-inch line only if the manhole is surcharged in the future. All costs associated with this construction including sidewalk block replacement and turf restoration shall be included in the lump sum bid.

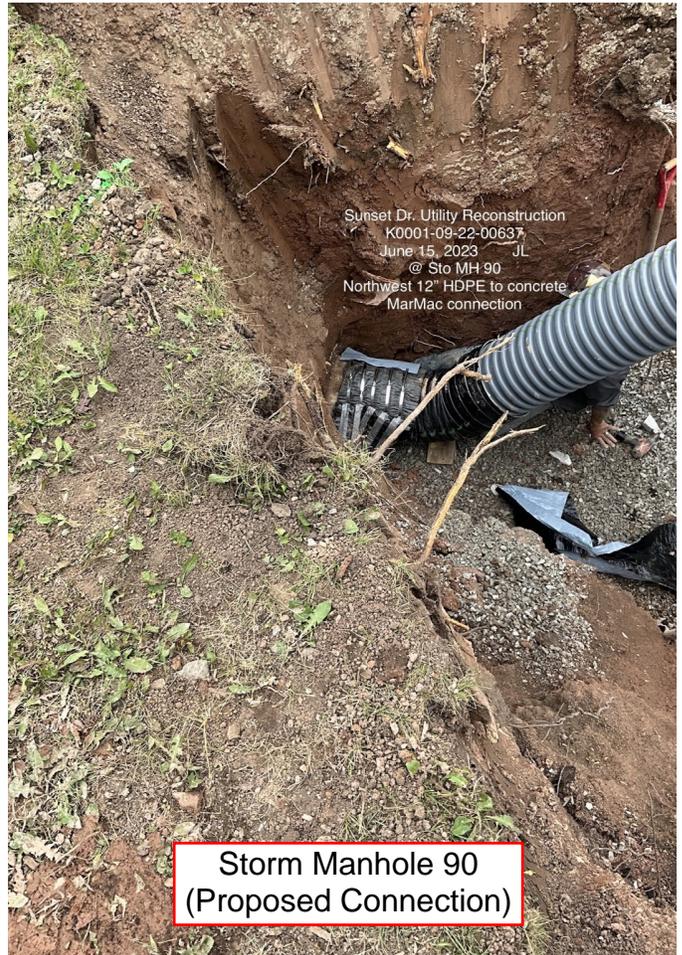
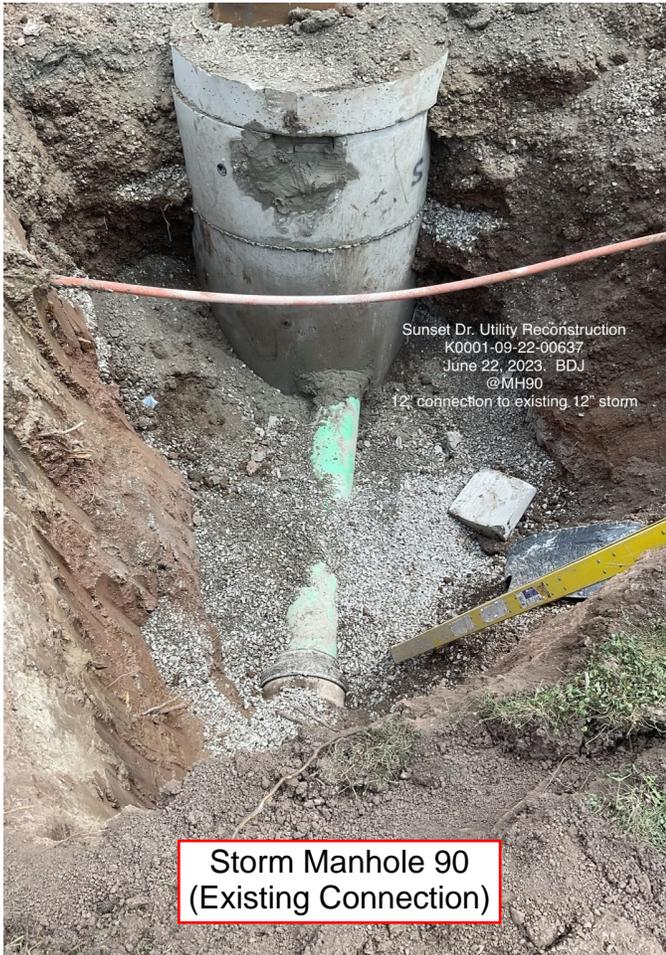
B. 15" STORM OUTFALL AT THE SUNSET DR. / ROGER ST. INTERSECTION

The existing 15" storm line is a 15" CMP which has a rotted-out bottom at about 26' from the buried manhole. The Village has not been able to televise this line to the river because of the hole in the pipe and void below. The intention of this lump sum bid item is to excavate down to the 15" pipe, remove the failed section of 15" CMP, and televise to the river to determine the overall condition of the 15" CMP. If the condition is acceptable, the failed section of pipe shall either be replaced or slip lined back to the manhole and then reconnected. Should the pipe be in overall poor condition the line shall be abandoned by bulkheading at the outfall and filled with sand slurry. Televising shall be paid under the unit price bid, slurry shall be paid under the unit price bid and all other costs associated with the described work, including surface restoration, shall be paid under the lump sum bid for this spot excavation and pipe repair.

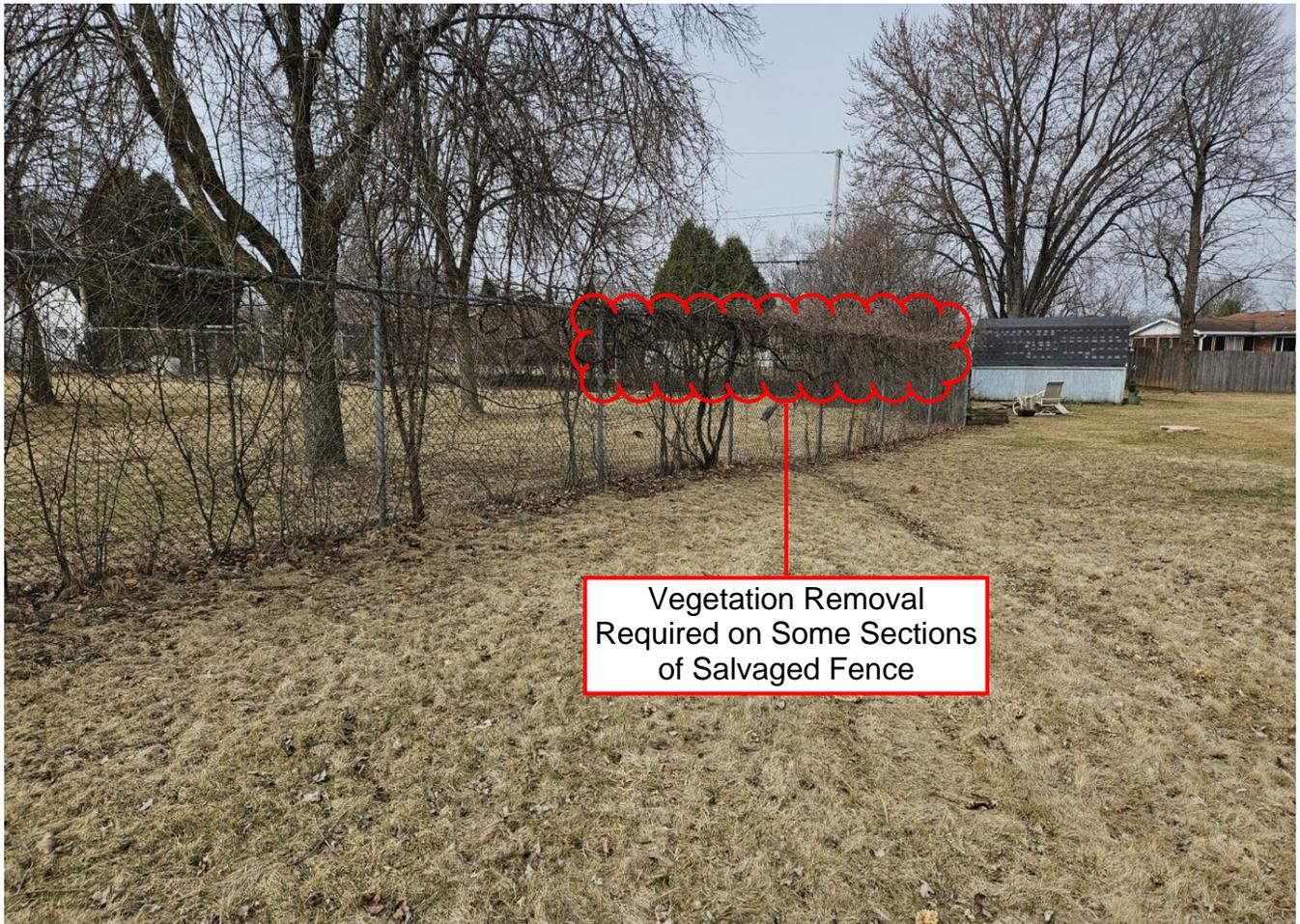
IV. WARRANTY PERIOD

- A. The Contract warranty shall be amended to a 2-year correction period and include all items of the Contract. The warranty shall commence on the approval date of the final Contract change order which establishes the final Contract price. This warranty shall specifically include settlement of the trail, prairie grass, landscaping, trees, etc.

END OF SECTION





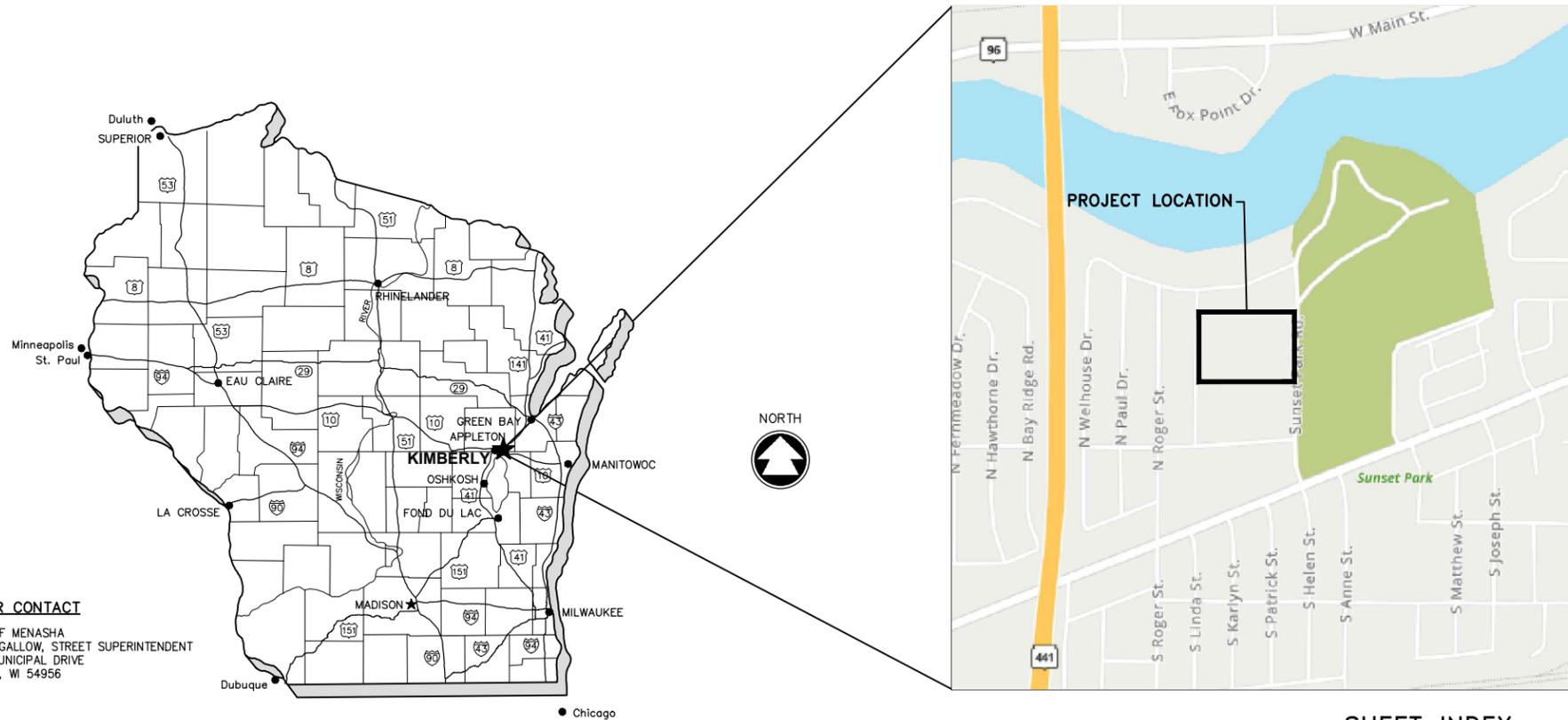


Typical Existing Fence to be Salvaged



PAPERMAKER POND SUNSET PARK VILLAGE OF KIMBERLY

OUTAGAMIE COUNTY, WISCONSIN
MCM # K0001-09-25-00156



CONTACT INFORMATION

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OWNER CONTACT

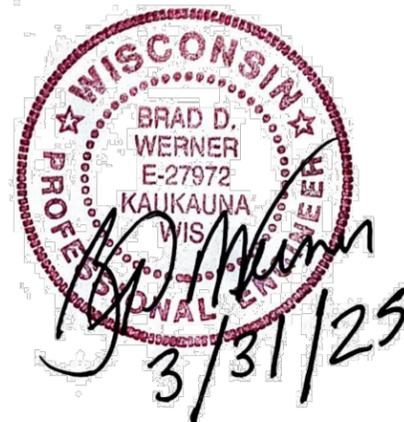
TOWN OF MENASHA
RANDY GALLOW, STREET SUPERINTENDENT
2000 MUNICIPAL DRIVE
NEENAH, WI 54956

DESIGN CONTACT

McMAHON ASSOCIATES, INC.
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DATE
MARCH 2025
PROJECT NO.
K0001-09-25-00156

STANDARD ABBREVIATIONS

AC	AGG	AH	ASPH	AVG	B-B	BEG	BIT	BK	B/L	BLDG	BM	BOC	BRG	C-C	CY	C&G	CB	CE	CHD	C/L	CL	CMP	CO	CONC	CORR	CP	CR	CS	CSW	CTH	CULV	D	DI	DIA	DIS	EA	EB	EBS	EG	ELEV	ELEC	EMB	EMAT	ENT	EOR	EP	EXC	EX	EW	F-F	FDN	FE	FERT	FG	F/L	FT	FTG	GRAV	GN	GV	HDPE	HE	HMA	HP	HT	HYD	ID	IN	INL	INV	IP	JCT	LB	LF	LP	ACRE	AGGREGATE	AHEAD	ASPHALT PAVEMENT	AVERAGE	BACK TO BACK	BEGIN	BITUMINOUS	BACK	BASE LINE	BUILDING	BENCH MARK	BACK OF CURB	BEARING	CENTER TO CENTER	CUBIC YARD	CURB AND GUTTER	CATCH BASIN	COMMERCIAL ENTRANCE	CHORD	CENTER LINE	CLASS (FOR CONC PIPE)	CORRUGATED METAL PIPE	CLEAN OUT	CONCRETE	CORRUGATED	CONTROL POINT	CRUSHED	CURB STOP	CONCRETE SIDEWALK	COUNTY TRUNK HIGHWAY	CULVERT	DEPTH OR DELTA	DUCTILE IRON	DIAMETER	DISCHARGE	EACH	EASTBOUND	EXCAVATION BELOW SUBGRADE	EDGE OF GRAVEL	ELEVATION	ELECTRIC	EMBANKMENT	EROSION MAT	ENTRANCE	END OF RADIUS	EDGE OF PAVEMENT	EXCAVATION	EXISTING	ENDWALL	FACE TO FACE	FOUNDATION	FIELD ENTRANCE	FERTILIZER	FINISHED GRADE	FLOW LINE	FOOT	FOOTING	GRAVEL	GRID NORTH	GAS VALVE	HIGH DENSITY POLYETHYLENE	HIGHWAY EASEMENT	HOT MIX ASPHALT	HIGH POINT	HEIGHT	HYDRANT	INSIDE DIAMETER	INCH	INLET	INVERT	IRON PIPE	JUNCTION	POUND	LINEAR FOOT	LIGHT POLE	LT	LVC	MAINT	MAT'L	MAX	MIN	MH	MP	NB	NO	NOR	OD	OBLIT	PAVT	PC	PCC	PE	PED	PGL	PI	P/L	PLE	PP	PRC	PROP	PSD	PSI	PT	PVC	PVI	PVT	R	RCP	RD	REBAR	REM	RECON	REQ'D	R/L	RP	RR	RT	R/W	SY	SALV	SAN	SEC	SHLDR	S/L	SQ	STA	STD	STO	SW	TC	TEL	TEMP	TLE	TV	TYP	UG	USH	VAR	VC	VERT	WB	WM	WV	LEFT	LENGTH OF VERTICAL CURVE	MAINTENANCE	MATERIAL	MAXIMUM	MINIMUM	MANHOLE	MILE POST	NORTHBOUND	NUMBER	NORMAL	OUTSIDE DIAMETER	OBLITERATE	PAVEMENT	POINT OF CURVATURE	PORTLAND CEMENT CONCRETE OR POINT OF COMPOUND CURVATURE	PRIVATE ENTRANCE	PEDESTAL	PROFILE GRADE LINE	POINT OF INTERSECTION	PROPERTY LINE	PERMANENT LIMITED EASEMENT	POWER POLE	POINT OF REVERSE CURVATURE	PROPOSED	PASSING SIGHT DISTANCE	POUNDS PER SQUARE INCH	POINT OF TANGENCY	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVATURE	POINT OF VERTICAL INTERSECTION	POINT OF VERTICAL TANGENCY	RADIUS	REINFORCED CONCRETE PIPE	ROAD	REINFORCEMENT ROD	REMOVE	RECONSTRUCT	REQUIRED	REFERENCE LINE	RADIUS POINT	RAILROAD	RIGHT	RIGHT-OF-WAY	SOUTHBOUND	SUPERELEVATION	SQUARE FEET	SLOPE INTERCEPT	STATE TRUNK HIGHWAY	SQUARE YARD	SALVAGED	SANITARY	SECTION	SHOULDER	SURVEY LINE	SQUARE	STATION	STANDARD	STORM	SIDEWALK	TOP OF CURB	TELEPHONE	TEMPORARY	TEMPORARY LIMITED EASEMENT	TELEVISION	TYPICAL	UNDERGROUND	U.S. HIGHWAY	VARIES	VERTICAL CURVE	VERTICAL	WESTBOUND	WATER MAIN	WATER VALVE
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GENERAL NOTES

- THE UTILITIES SHOWN IN PLAN AND PROFILE ARE INDICATED IN ACCORDANCE WITH AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES, INCLUDING ANY PRIVATE UTILITIES, FROM THE OWNERS OF THE RESPECTIVE UTILITIES. ALL UTILITIES SHALL BE NOTIFIED 72 HRS. PRIOR TO EXCAVATION.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PROPOSED SITE GRADES BY FIELD CHECKING TWO (2) BENCHMARKS AND A MINIMUM OF ONE (1) SITE FEATURE AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY MCMAHON OF ANY VERTICAL DISCREPANCY.
- THE PROPERTY LINES, RIGHT-OF-WAY LINES AND OTHER PROPERTY INFORMATION ON THIS DRAWING WERE DEVELOPED OR OBTAINED AS PART OF THE COUNTY GEOGRAPHIC INFORMATION SYSTEM OR THROUGH THE COUNTY PROPERTY TAX MAPPING FUNCTION. MCMAHON DOES NOT GUARANTEE THIS INFORMATION TO BE CORRECT, CURRENT OR COMPLETE. THE PROPERTY AND RIGHT-OF-WAY INFORMATION ARE INTENDED FOR USE AS A GENERAL REFERENCE AND ARE NOT INTENDED OR SUITABLE FOR SITE-SPECIFIC USES. ANY USE TO THE CONTRARY OF THE ABOVE STATED USES IS THE RESPONSIBILITY OF THE USER AND SUCH USE IS AT THE USER'S OWN RISK.
- NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT PRIOR APPROVAL FROM THE OWNER.
- A SAWED JOINT IS REQUIRED WHERE NEW HMA PAVEMENT MATCHES EXISTING ASPHALTIC CONCRETE SURFACE.
- ALL CURB RADII SHOWN ON THE PLAN SHEETS ARE TO THE BACK OF CURB UNLESS OTHERWISE NOTED.
- DIMENSIONS ARE TO THE BACK OF CURB UNLESS OTHERWISE NOTED.

STANDARD SYMBOLS (PLAN VIEW ONLY)

■	2" IRON PIPE FOUND	—T—	TELEPHONE CABLE — BURIED
✖	1 1/4" REBAR FOUND	—E—	ELECTRIC CABLE — BURIED
✖	1 1/4" x 30" IRON REBAR WEIGHING 4.30 LB/LF SET	—OHU—	UTILITIES — OVERHEAD
●	1" (1.315 OD) IRON PIPE FOUND	—FO—	FIBER OPTIC CABLE — BURIED
●	1" IRON PIPE SET	—G—	GAS MAIN
●	3/4" IRON REBAR FOUND	—TV—	CABLE TELEVISION — BURIED
○	3/4" IRON PIPE FOUND	—D—	DITCH LINE
○	3/4" x 24" IRON REBAR WEIGHING 1.5 LB/LF SET	—S—	STREET C/L OR R/L
■	MAG NAIL FOUND	—P—	PROPERTY LINE
□	MAG NAIL SET	—R—	RIGHT-OF-WAY LINE
▲	MAG SPIKE FOUND	—S—	SECTION LINE
▲	MAG SPIKE SET	—E—	EXISTING CONTOURS
×	CHISEL CROSS FOUND	—P—	PROPOSED CONTOURS
×	CHISEL CROSS SET	—FM—	EXISTING FORCEMAIN SEWER
⊙	COUNTY MONUMENT	—SAN—	EXISTING SANITARY SEWER
⊙	CONCRETE MONUMENT FOUND	—SAN—	PROPOSED SANITARY SEWER
⊙	CONTROL POINT HORIZONTAL	—WM—	EXISTING WATER MAIN
⊙	VERTICAL BENCHMARK	—WM—	PROPOSED WATER MAIN
⊙	SOIL BORING OR MONITORING WELL	—STO—	EXISTING STORM SEWER
⊙	POWER POLE	—STO—	PROPOSED STORM SEWER
⊙	POWER POLE W/GUY WIRE	—C—	EXISTING CURB & GUTTER
⊙	TELEPHONE OR TELEVISION PEDESTAL	—P—	PROPOSED CURB & GUTTER
⊙	MAILBOX	—R—	PROPOSED REJECT CURB & GUTTER
⊙	SIGN	—C—	EXISTING CULVERT WITH END SECTIONS
⊙	RAILROAD CROSS BUCK	—C—	PROPOSED CULVERT WITH END SECTIONS
⊙	RAILROAD GATE ARM	—B—	BUILDING OUTLINE
⊙	RAILROAD TRACKS	—F—	FENCE LINE
⊙	LIGHT POLE	—S—	SAW CUT REQ'D
⊙	WOOD POLE	—P—	PERIMETER CONTROL
⊙	TRAFFIC SIGNAL	—G—	GUARD RAIL
⊙	TRAFFIC SIGNAL MAST ARM	—D—	DITCH CHECK
⊙	CONIFEROUS TREE	—P—	INLET PROTECTION
⊙	DECIDUOUS TREE	—P—	PROTECTING PAD
⊙	TREE OR BRUSH LINE	—B—	TURBIDITY BARRIER OR SHEET PILING
⊙	BED ROCK (IN PROFILE VIEW)	—S—	SANDBAG COFFERDAM
⊙	HANDICAPPED PARKING STALL	—I—	SLOPE INTERCEPT
⊙	EXISTING SPOT ELEVATION	—L—	LIMITS OF DISTURBANCE
⊙	PROPOSED SPOT ELEVATION	—A—	ASPHALT PAVEMENT
⊙	DRAINAGE HIGH POINT	—C—	CONCRETE SIDEWALK/DRIVEWAY
⊙	DRAINAGE DIRECTION	—G—	GRAVEL
⊙	EXISTING MANHOLE	—R—	RIP-RAP (SIZE AS SPECIFIED)
⊙	PROPOSED MANHOLE	—B—	BRICK/PAVERS
⊙	EXISTING INLET	—E—	PROPOSED EROSION MAT
⊙	PROPOSED INLET	—T—	PROPOSED TURF REINFORCEMENT MAT (TRM)
⊙	EXISTING YARD DRAIN	—W—	EXISTING DELINEATED WETLANDS
⊙	PROPOSED YARD DRAIN		
⊙	EXISTING CLEAN OUT		
⊙	PROPOSED CLEAN OUT		
⊙	EXISTING DOWNSPOUT		
⊙	PROPOSED DOWNSPOUT		
⊙	EXISTING WATER VALVE		
⊙	PROPOSED WATER VALVE		
⊙	EXISTING CURB STOP		
⊙	PROPOSED CURB STOP		
⊙	EXISTING FIRE HYDRANT		
⊙	PROPOSED FIRE HYDRANT		
⊙	PROPOSED WATER FITTING		
⊙	PROPOSED WATER REDUCER		
⊙	PROPOSED ENDCAP		
⊙	GAS VALVE		

EROSION & SEDIMENT CONTROL PLAN

BEST MANAGEMENT PRACTICES:

THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING BEST MANAGEMENT PRACTICES IN ACCORDANCE WITH WISCONSIN DEPARTMENT OF NATURAL RESOURCES (DNR) TECHNICAL STANDARDS. THESE STANDARDS MAY BE FOUND ON THE DNR WEBSITE AT <http://www.dnr.wi.gov/dnoff/stormwater/techstds.htm>. RIP-RAP SHALL BE IN ACCORDANCE WITH SECTION 606, WS-DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, LATEST EDITION, UNTIL TECHNICAL STANDARD 1065 IS COMPLETED BY THE DNR. THE MINIMUM BEST MANAGEMENT PRACTICES SPECIFIED FOR THIS PROJECT ARE AS FOLLOWS:

- | | |
|---|--|
| [] LAND APPLICATION OF ADDITIVES (1050) | [X] DE-WATERING (1061) |
| [] WATER APPLICATION OF ADDITIVES (1051) | [] DITCH CHECK (1062) |
| [] NON-CHANNEL EROSION MAT (1052) | [] SEDIMENT TRAP (1063) |
| [] CHANNEL EROSION MAT (1053) | [] SEDIMENT BASIN (1064) |
| [] VEGETATIVE BUFFER (1054) | [] RIP-RAP (1065) |
| [] SEDIMENT BALE BARRIER (1055) | [] CONSTRUCTION DIVERSION (1066) |
| [] PERIMETER SEDIMENT CONTROL (1056) | [] TEMPORARY GRADING PRACTICES (1067) |
| [X] TRACKOUT CONTROL (1057) | [X] DUST CONTROL (1068) |
| [X] MULCHING (1058) | [] TURBIDITY BARRIER (1069) |
| [X] SEEDING (1059) | [] SILT CURTAIN (1070) |
| [X] STORM DRAIN INLET PROTECTION (1060) | [] HORIZONTAL DIRECTIONAL DRILLING (1072) |

THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES AND IMPLEMENT BEST MANAGEMENT PRACTICES TO PREVENT OR REDUCE ALL OF THE FOLLOWING IN RUNOFF:

- DEPOSITION OR TRACKING OF SOIL ONTO STREETS BY VEHICLES.
- DISCHARGE OF SEDIMENT INTO STORM WATER INLETS.
- DISCHARGE OF SEDIMENT INTO ADJACENT STREAMS, RIVERS, LAKES AND WETLANDS.
- DISCHARGE OF SEDIMENT FROM DITCHES AND STORM SEWERS THAT FLOW OFFSITE.
- DISCHARGE OF SEDIMENT FROM DEWATERING ACTIVITIES.
- DISCHARGE OF SEDIMENT FROM SOIL STOCKPILES EXISTING FOR 7 DAYS OR MORE.
- DISCHARGE OF SEDIMENT FROM EROSION OUTLET FLOWS.
- DISCHARGE OF CHEMICALS, CEMENT AND BUILDING MATERIALS.
- DISCHARGE OF UNTREATED VEHICLE AND WHEEL WASH WATER.

THE CONTRACTOR SHALL IMPLEMENT THE FOLLOWING PREVENTATIVE MEASURES:

- PRESERVE EXISTING VEGETATION WHENEVER POSSIBLE.
- MINIMIZE SOIL COMPACTION AND PRESERVE TOPSOIL.
- MINIMIZE LAND DISTURBANCES ON SLOPES OF 20% OR MORE.
- MINIMIZE THE AMOUNT OF SOIL EXPOSED AT ANY ONE TIME.
- DIVERT CLEAR WATER AWAY FROM EXPOSED SOILS.
- TEMPORARILY STABILIZE EXPOSED SOILS THAT WILL NOT BE ACTIVE FOR 14 DAYS OR MORE. USE MULCHING, SEEDING, POLYACRYLAMIDE OR GRAVELING TO STABILIZE.
- PERMANENTLY STABILIZE EXPOSED SOILS AS SOON AS POSSIBLE.
- CONTRACTOR SHALL EDUCATE ITS EMPLOYEES AND SUBCONTRACTORS ABOUT PROPER SPILL PREVENTION AND RESPONSE PROCEDURES. IF A SPILL OCCURS, THE CONTRACTOR SHALL EVACUATE THE AREA AND IMMEDIATELY NOTIFY THE LOCAL MUNICIPALITY, FIRE DEPARTMENT OR 911 EMERGENCY SYSTEM. IF NO FIRE, EXPLOSION OR LIFE / HEALTH SAFETY HAZARD EXISTS, THE NEXT STEP IS TO CONTAIN THE SPILL AND PERFORM CLEANUP. USE DRY CLEANUP METHODS, NOT WET.

THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING BEST MANAGEMENT PRACTICES DESTROYED AS A RESULT OF CONSTRUCTION ACTIVITIES BY THE END OF THE WORK DAY. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING BEST MANAGEMENT PRACTICES TEMPORARILY REMOVED FOR CONSTRUCTION ACTIVITY AS SOON AS THOSE ACTIVITIES ARE COMPLETED. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING OF TEMPORARY BEST MANAGEMENT PRACTICES AFTER CONSTRUCTION IS COMPLETE AND PERMANENT VEGETATION IS ESTABLISHED.

INSPECTION & MAINTENANCE:

THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING BEST MANAGEMENT PRACTICES WEEKLY, AND WITHIN 24 HOURS FOLLOWING A RAINFALL OF 0.5 INCHES OR GREATER. WRITTEN DOCUMENTATION OF EACH INSPECTION SHALL BE KEPT AT THE CONSTRUCTION SITE AND SHALL INCLUDE THE FOLLOWING INFORMATION: DATE, TIME, AND LOCATION OF INSPECTION; NAME OF INDIVIDUAL WHO PERFORMED THE INSPECTION; AN ASSESSMENT OF THE CONDITION OF BEST MANAGEMENT PRACTICES; A DESCRIPTION OF ANY BEST MANAGEMENT PRACTICE IMPLEMENTATION AND MAINTENANCE PERFORMED; AND A DESCRIPTION OF THE PRESENT PHASE OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING, REPAIRING, OR REPLACING BEST MANAGEMENT PRACTICES AS NECESSARY WITHIN 24 HOURS OF AN INSPECTION OR NOTIFICATION. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING, MAINTAINING, REPAIRING, OR REPLACING BEST MANAGEMENT PRACTICES UNTIL ALL LAND DISTURBING CONSTRUCTION ACTIVITY IS COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER IS ESTABLISHED WITH A DENSITY OF AT LEAST 70%.

THE CONTRACTOR IS RESPONSIBLE FOR POSTING THE PERMIT IN A CONSPICUOUS LOCATION ON THE CONSTRUCTION SITE. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING A COPY OF THE APPROVED REPORTS, PLANS, AMENDMENTS, INSPECTION REPORTS, AND PERMITS AT THE CONSTRUCTION SITE AT ALL TIMES UNTIL ALL LAND DISTURBING CONSTRUCTION ACTIVITY IS COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER IS ESTABLISHED WITH A DENSITY OF AT LEAST 70%. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE OWNER WHEN THE VEGETATIVE DENSITY REACHES AT LEAST 70%. THE OWNER IS RESPONSIBLE FOR TERMINATING DNR PERMIT COVERAGE.

AMENDMENTS:

THE CONTRACTOR IS RESPONSIBLE FOR AMENDING THE EROSION & SEDIMENT CONTROL PLAN IF: THERE IS A CHANGE IN CONSTRUCTION, OPERATION OR MAINTENANCE AT THE SITE WHICH HAS THE REASONABLE POTENTIAL FOR THE DISCHARGE OF POLLUTANTS; THE ACTIONS REQUIRED BY THE PLAN FAIL TO REDUCE THE IMPACTS OF POLLUTANTS CARRIED BY CONSTRUCTION SITE RUNOFF; OR IF THE DNR NOTIFIES THE APPLICANT OF CHANGES NEEDED IN THE PLAN. THE DNR AND OWNER SHALL BE NOTIFIED 5 WORKING DAYS PRIOR TO MAKING CHANGES TO THE PLAN.

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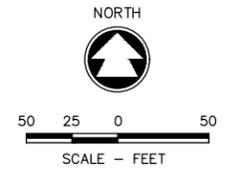
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PAPERMAKER POND
VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
ABBREVIATIONS, SYMBOLS & NOTES

DESIGNED PTK	DRAWN K.J.B.
PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
SHEET NO. 01	

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VERTICAL BENCHMARK CONTROL		
POINT #	ELEVATION	DESCRIPTION
16	734.75	MAG NAIL IN LIGHT POLE
17	729.60	MAG NAIL IN LIGHT POLE
31	736.30	HYDRANT TAG BOLT
32	733.30	HYDRANT TAG BOLT

HORIZONTAL CONTROL POINTS			
POINT #	NORTHING	EASTING	DESCRIPTION
3	566706.44	842857.07	MAG NAIL
4	566832.19	842740.69	MAG NAIL
5	566643.81	842291.73	MAG NAIL
18	566509.75	842568.81	NAIL
19	566556.11	842339.54	NAIL
20	566502.60	842153.88	NAIL
21	566417.53	842290.08	NAIL
25	566695.14	842345.40	MAG NAIL
33	566206.45	842757.30	MAG NAIL
35	566889.06	843160.55	MAG NAIL

NOTE:
 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PROPOSED SITE GRADES BY FIELD CHECKING TWO (2) BENCHMARKS AND A MINIMUM OF ONE (1) SITE FEATURE AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ALSO VERIFY HORIZONTAL CONTROL BY FIELD CHECKING SEVERAL CONTROL POINTS AND SHALL IMMEDIATELY NOTIFY MCMAHON OF ANY DISCREPANCIES.

VERTICAL DATUM
 ELEVATIONS ARE REFERENCED TO NGS DATA:
 CONTROL POINT NAME: 4K94
 POINT ID: DE7742 NAVD 88 DATUM
 BY CONVENTIONAL LEVEL LOOP TO ELEVATION = 748.25 (2007 ADJUSTMENT)
 LEVEL LOOP PER FIELD BOOK 1522 PAGES 43-50
 FIELD BOOK 1567 PAGES 67-68

HORIZONTAL DATUM:
 COORDINATES ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM AS PUBLISHED FOR OUTAGAMIE COUNTY NAD 83(1991)

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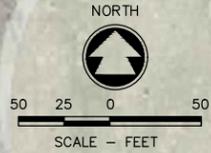
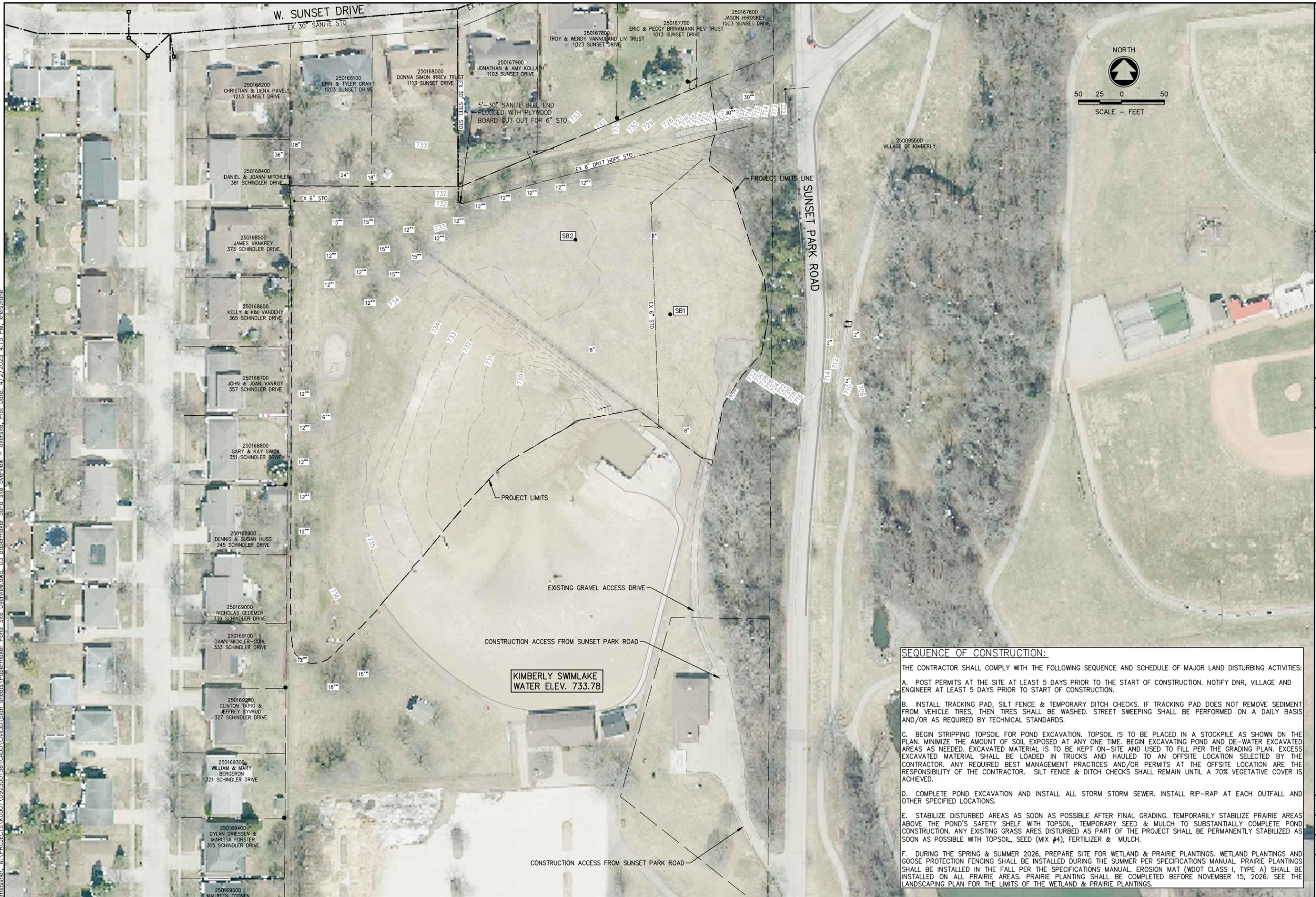
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PAPERMAKER POND
VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
SURVEY CONTROL

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PTK	JJJ
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SEQUENCE OF CONSTRUCTION:

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SEQUENCE AND SCHEDULE OF MAJOR LAND DISTURBING ACTIVITIES:

- POST PERMITS AT THE SITE AT LEAST 5 DAYS PRIOR TO THE START OF CONSTRUCTION. NOTIFY DNR, VILLAGE AND ENGINEER AT LEAST 5 DAYS PRIOR TO START OF CONSTRUCTION.
- INSTALL TRACKING PAD, SILT FENCE & TEMPORARY DITCH CHECKS. IF TRACKING PAD DOES NOT REMOVE SEDIMENT FROM VEHICLE TIRES, THEN TIRES SHALL BE WASHED. STREET SWEEPING SHALL BE PERFORMED ON A DAILY BASIS AND/OR AS REQUIRED BY TECHNICAL STANDARDS.
- BEGIN STRIPPING TOPSOIL FOR POND EXCAVATION. TOPSOIL IS TO BE PLACED IN A STOCKPILE AS SHOWN ON THE PLAN. MINIMIZE THE AMOUNT OF SOIL EXPOSED AT ANY ONE TIME. BEGIN EXCAVATING POND AND DE-WATER EXCAVATED AREAS AS NEEDED. EXCAVATED MATERIAL IS TO BE KEPT ON-SITE AND USED TO FILL PER THE GRADING PLAN. EXCESS EXCAVATED MATERIAL SHALL BE LOADED IN TRUCKS AND HAULED TO AN OFFSITE LOCATION SELECTED BY THE CONTRACTOR. ANY REQUIRED BEST MANAGEMENT PRACTICES AND/OR PERMITS AT THE OFFSITE LOCATION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SILT FENCE & DITCH CHECKS SHALL REMAIN UNTIL A 70% VEGETATIVE COVER IS ACHIEVED.
- COMPLETE POND EXCAVATION AND INSTALL ALL STORM STORM SEWER. INSTALL RIP-RAP AT EACH OUTFALL AND OTHER SPECIFIED LOCATIONS.
- STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE AFTER FINAL GRADING. TEMPORARILY STABILIZE PRAIRIE AREAS ABOVE THE POND'S SAFETY SHELVE WITH TOPSOIL, TEMPORARY SEED & MULCH TO SUBSTANTIALLY COMPLETE POND CONSTRUCTION. ANY EXISTING GRASS AREAS DISTURBED AS PART OF THE PROJECT SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE WITH TOPSOIL, SEED (MIX #4), FERTILIZER & MULCH.
- DURING THE SPRING & SUMMER 2026, PREPARE SITE FOR WETLAND & PRAIRIE PLANTINGS. WETLAND PLANTINGS AND GOOSE PROTECTION FENCING SHALL BE INSTALLED DURING THE SUMMER PER SPECIFICATIONS MANUAL. PRAIRIE PLANTINGS SHALL BE INSTALLED IN THE FALL PER THE SPECIFICATIONS MANUAL. EROSION MAT (WDOT CLASS 1, TYPE A) SHALL BE INSTALLED ON ALL PRAIRIE AREAS. PRAIRIE PLANTING SHALL BE COMPLETED BEFORE NOVEMBER 15, 2026. SEE THE LANDSCAPING PLAN FOR THE LIMITS OF THE WETLAND & PRAIRIE PLANTINGS.

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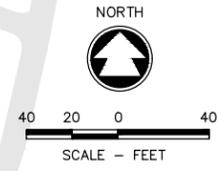
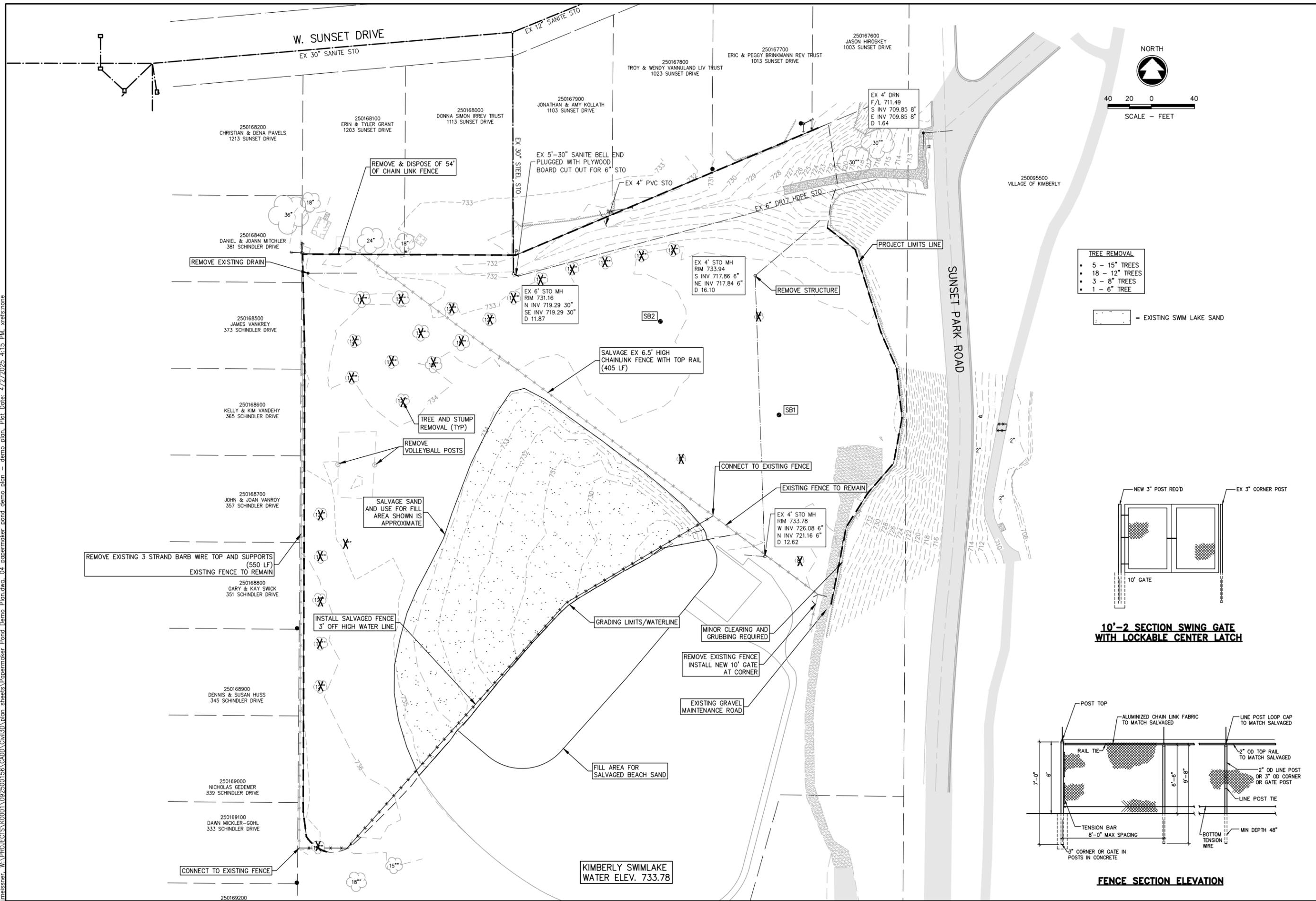
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SITE OVERVIEW

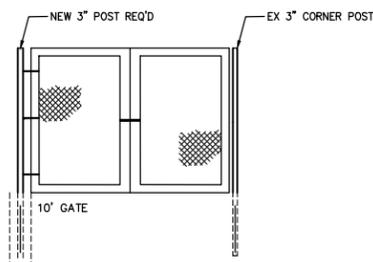
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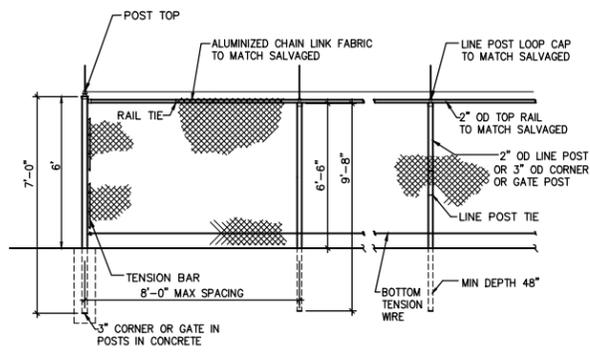


- TREE REMOVAL**
- 5 - 15" TREES
 - 18 - 12" TREES
 - 3 - 8" TREES
 - 1 - 6" TREE

[Symbol] = EXISTING SWM LAKE SAND



10'-2 SECTION SWING GATE WITH LOCKABLE CENTER LATCH



FENCE SECTION ELEVATION

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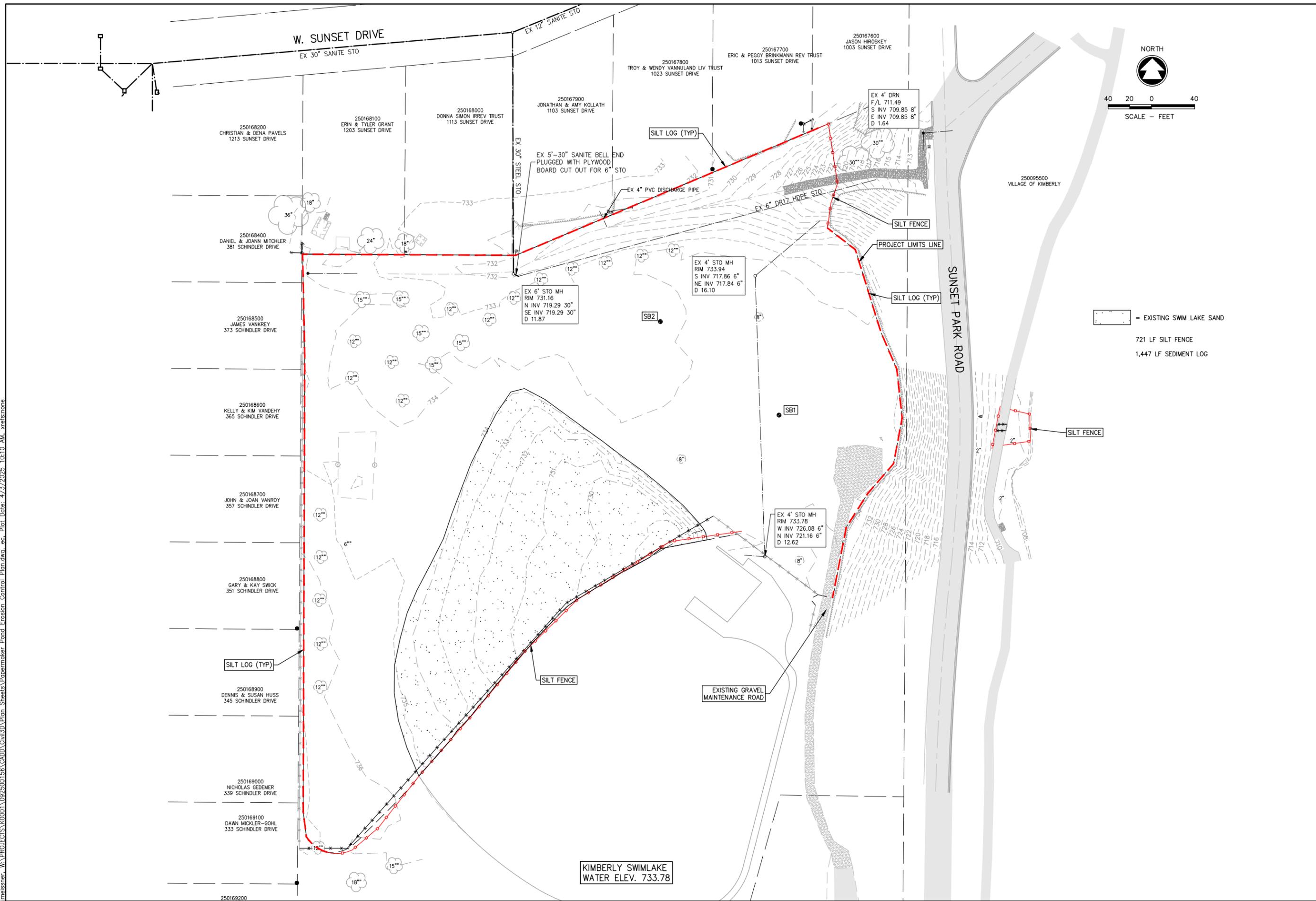
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**PAPERMAKER POND
 VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
 DEMOLITION AND FENCING PLAN**

DESIGNED PTK	DRAWN K.J.B.
PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
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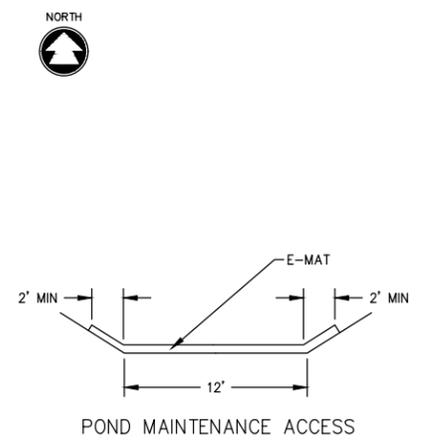
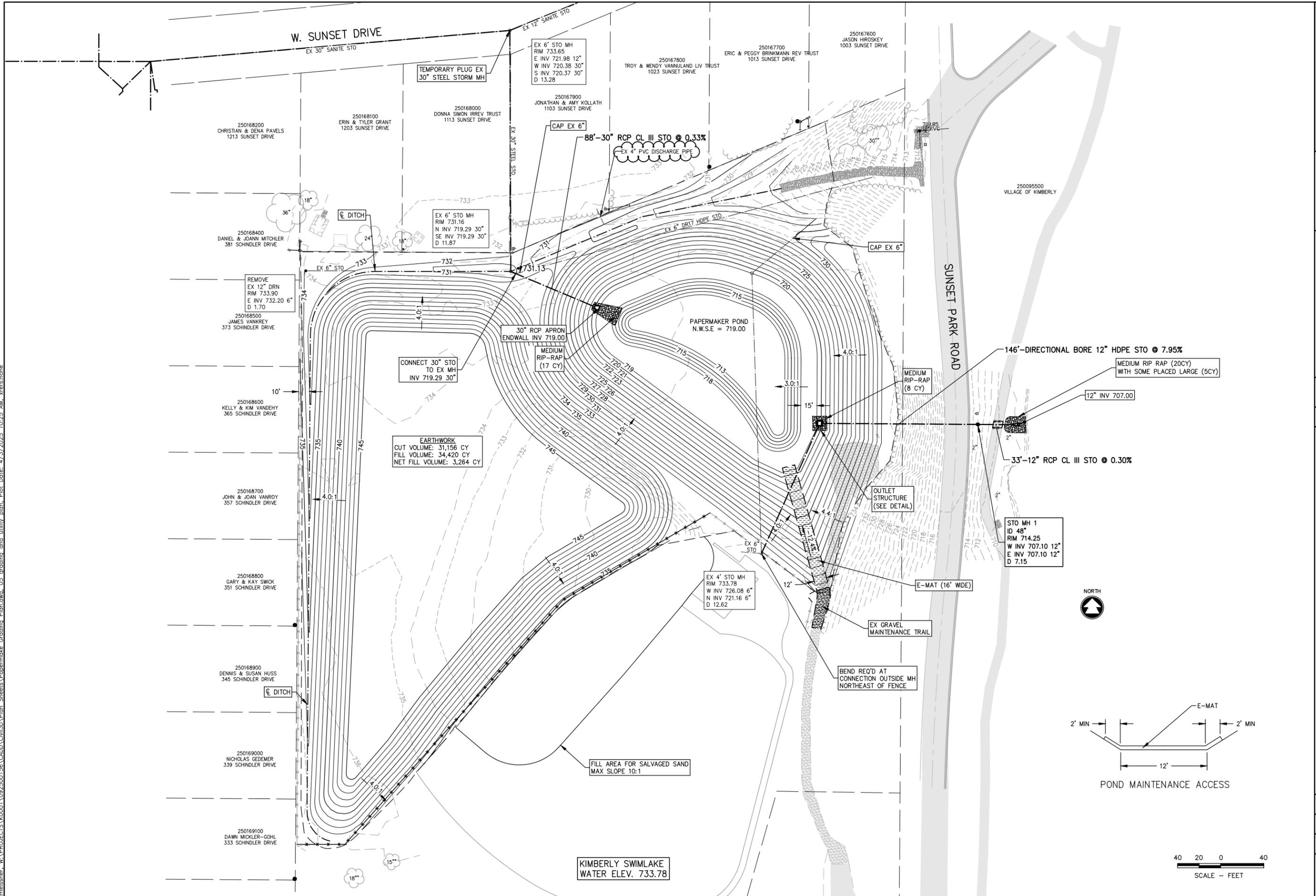
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**PAPERMAKER POND
 VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
 EROSION CONTROL PLAN**

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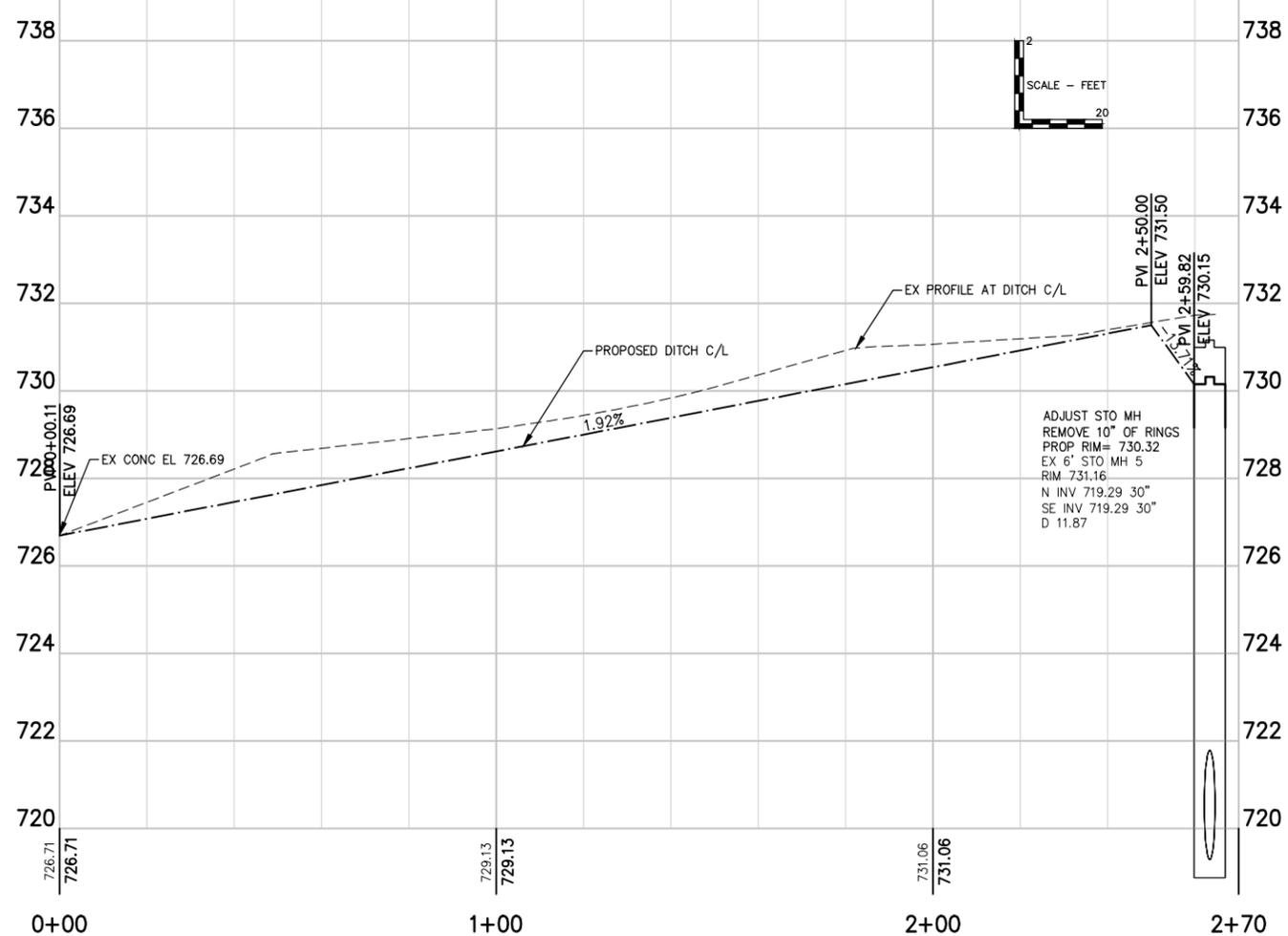
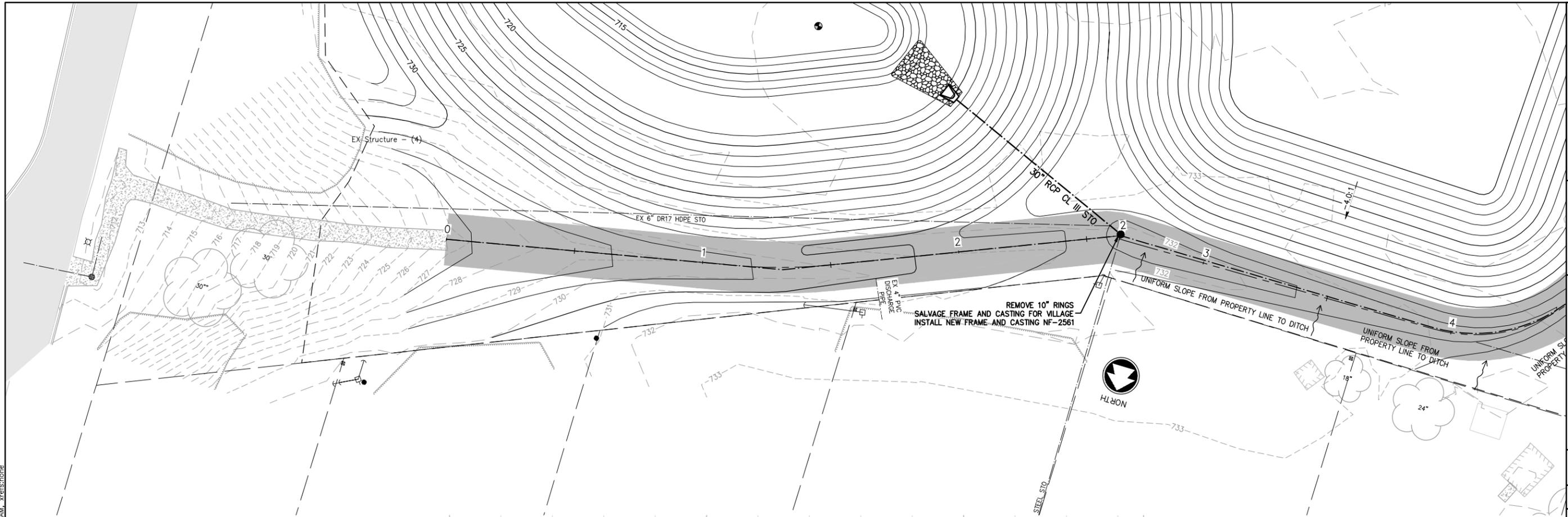
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PAPERMAKER POND, OUTAGAMIE COUNTY, WI
VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
GRADING AND UTILITY PLAN

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PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
SHEET NO. 06	

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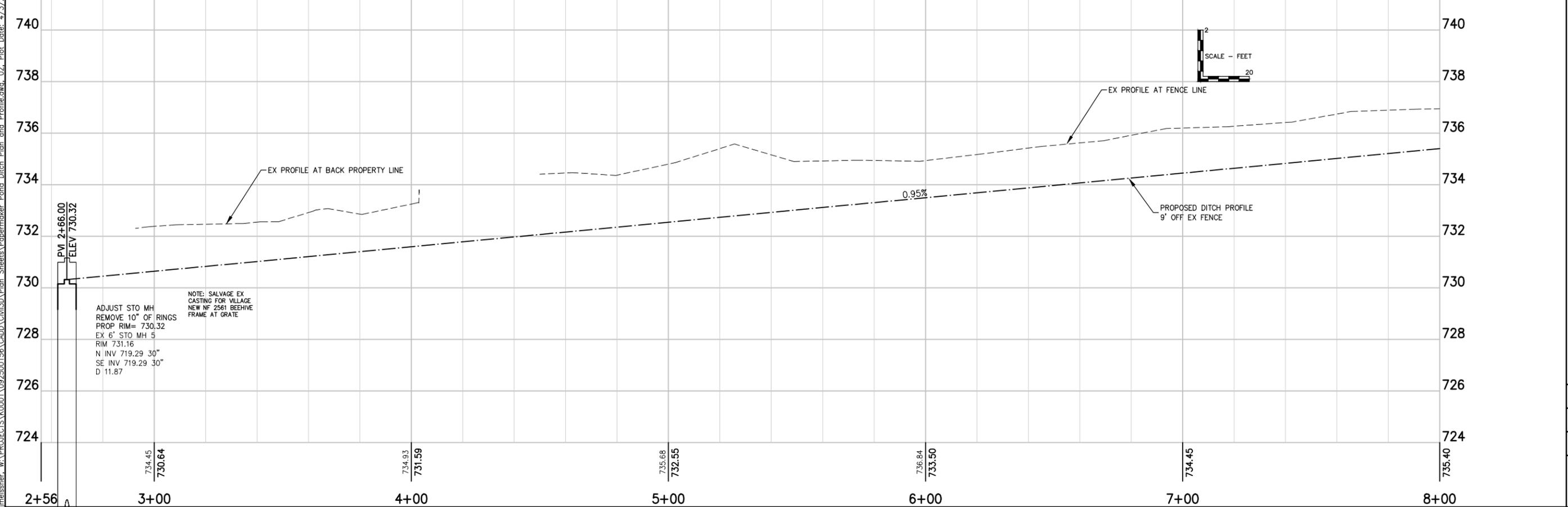
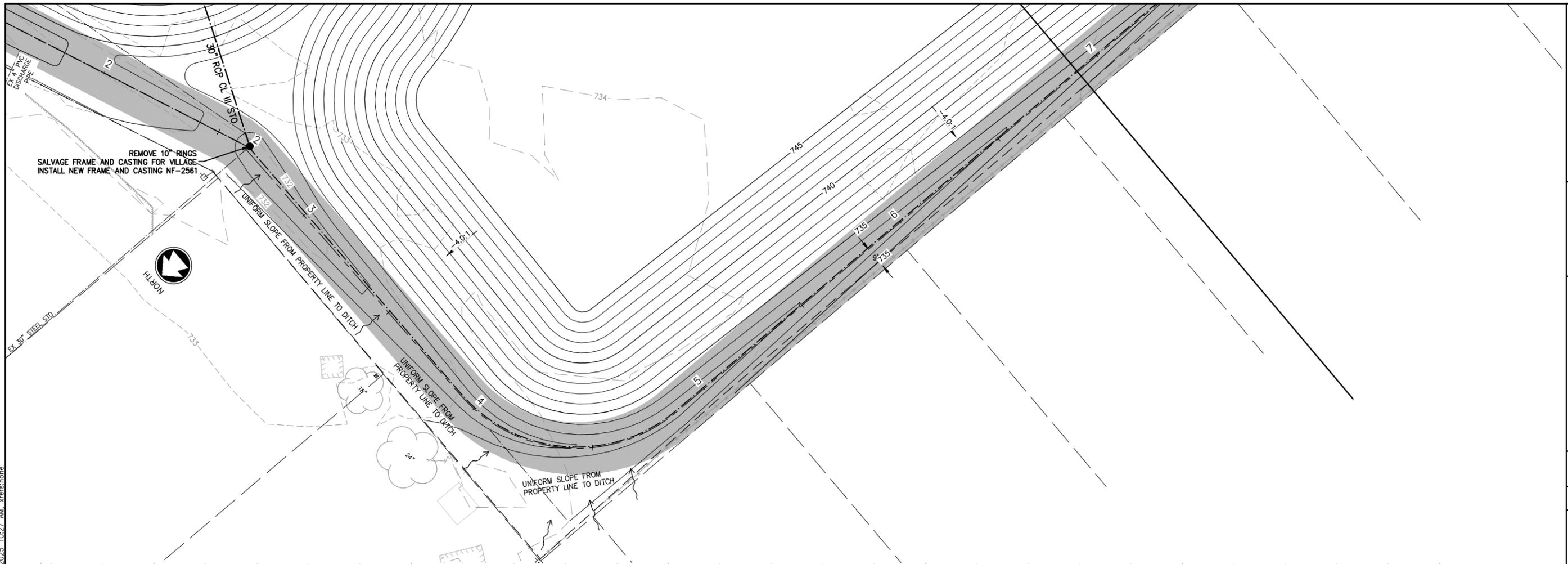
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PAPERMAKER POND
VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
WEST DITCH PLAN AND PROFILE

DESIGNED	DRAWN
PTK	JJJ
PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
SHEET NO. 07	

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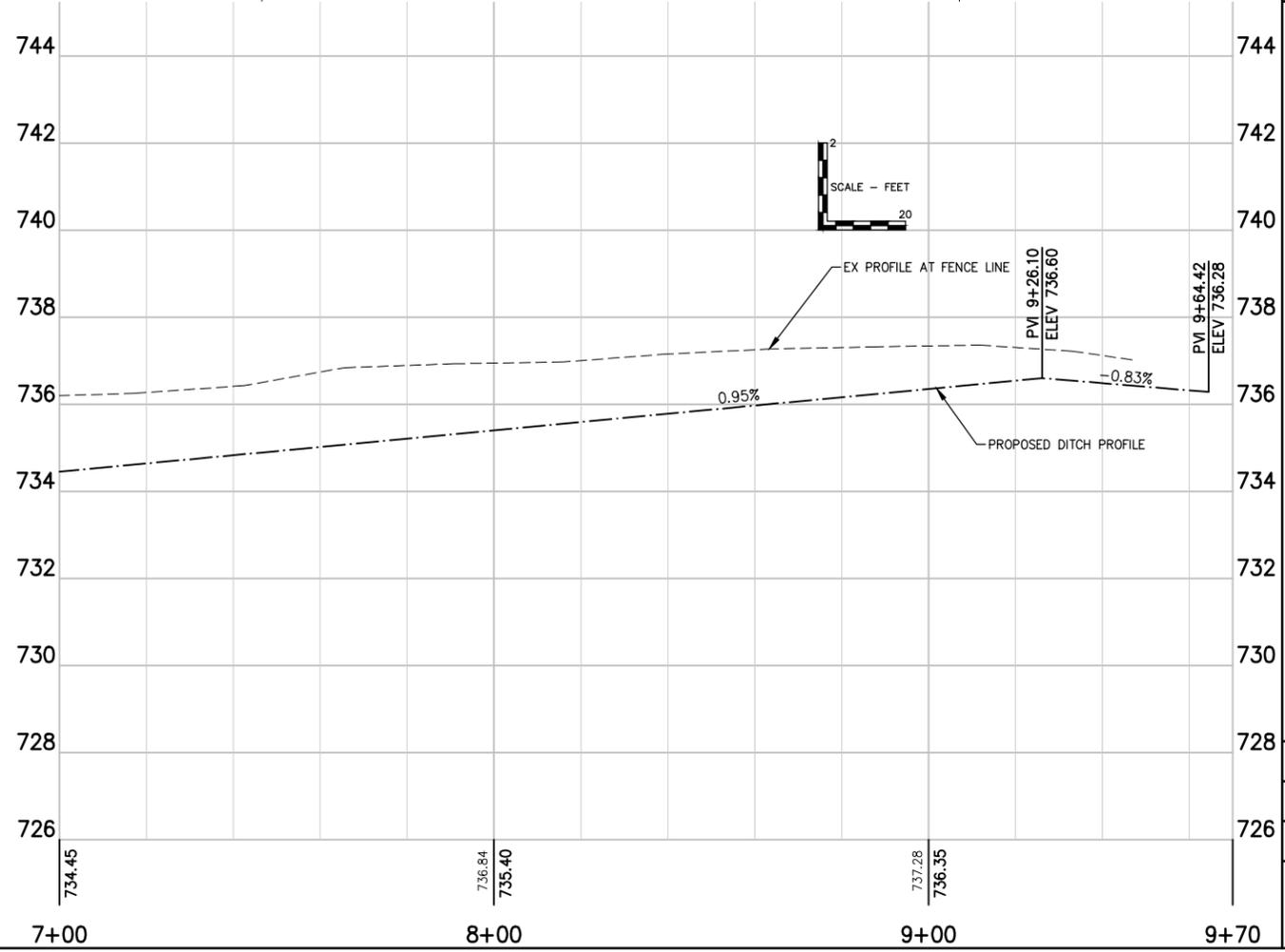
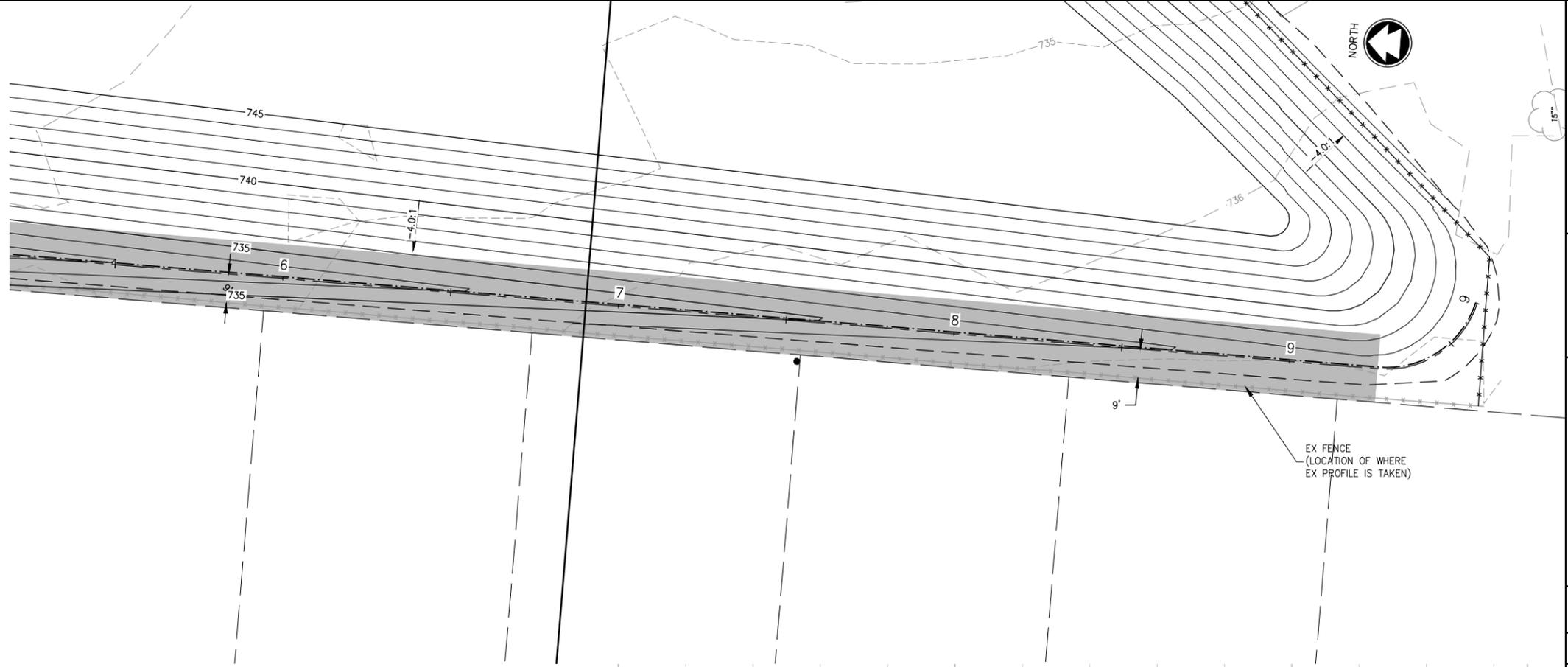
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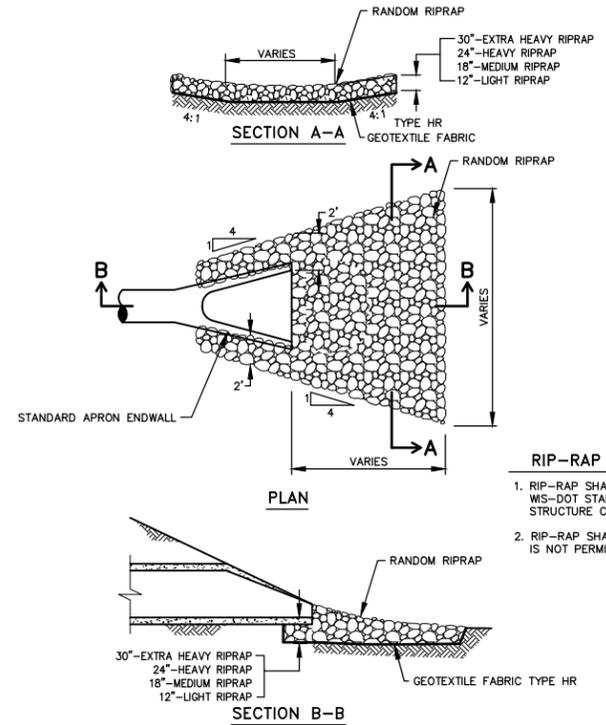
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WEST DITCH PLAN AND PROFILE

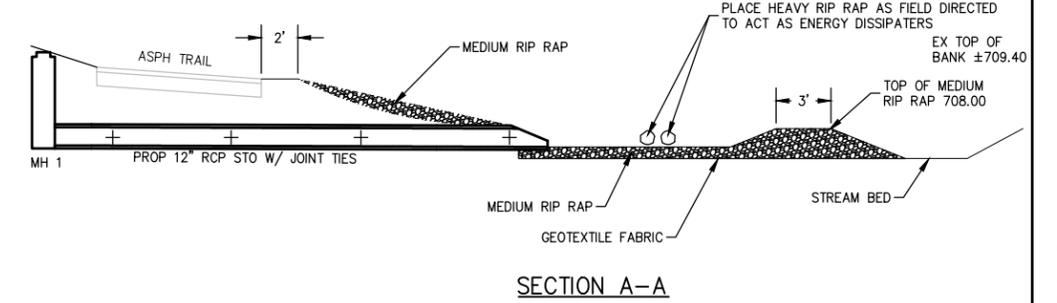
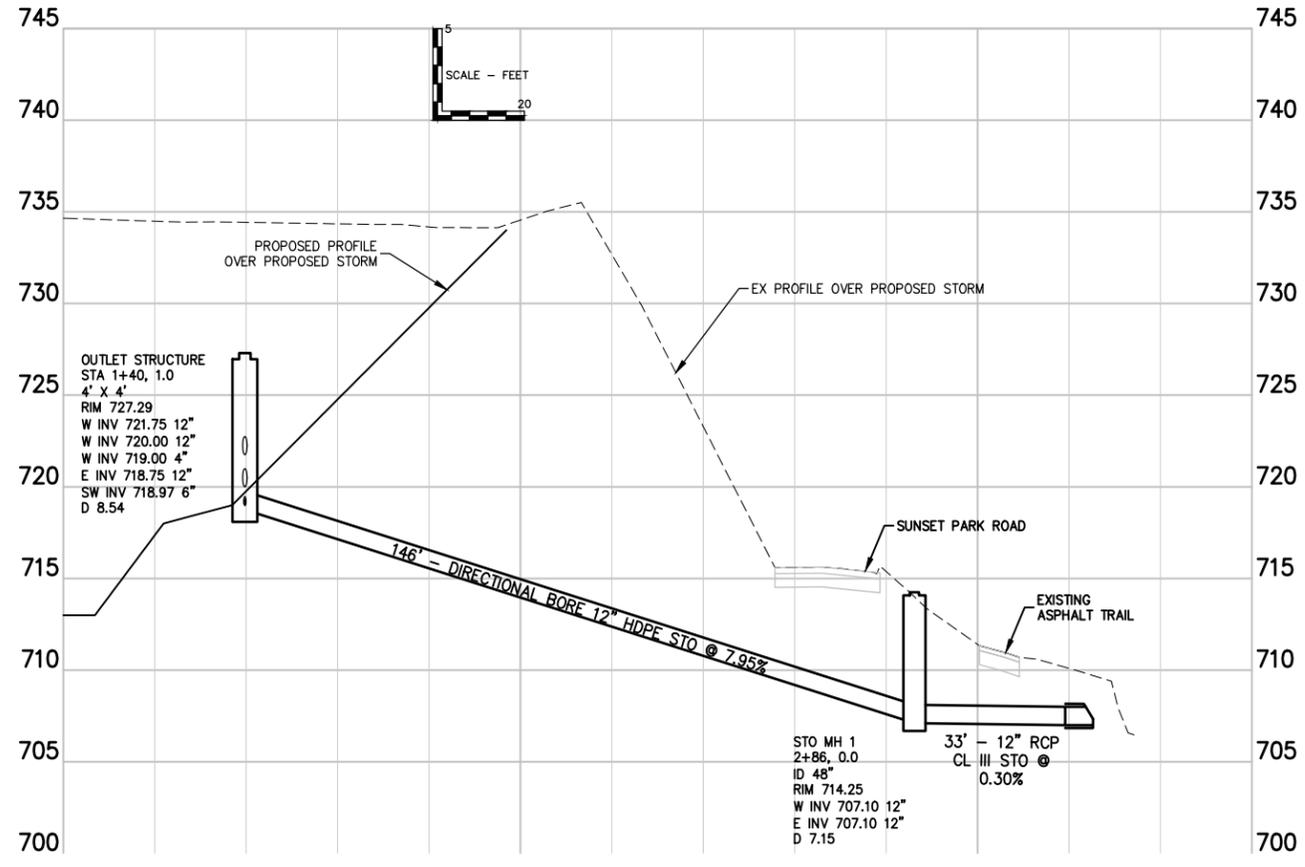
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PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
SHEET NO. 09	

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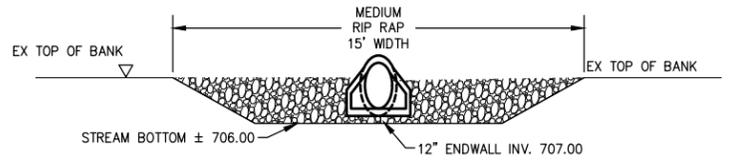


- RIP-RAP**
- RIP-RAP SHALL BE IN ACCORDANCE WITH SECTION 606, WS-DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, CURRENT EDITION.
 - RIP-RAP SHALL BE ANGULAR. ROUND RIP-RAP IS NOT PERMITTED.

RIPRAP AT STORM SEWER OUTFALL



SECTION A-A



SECTION B-B

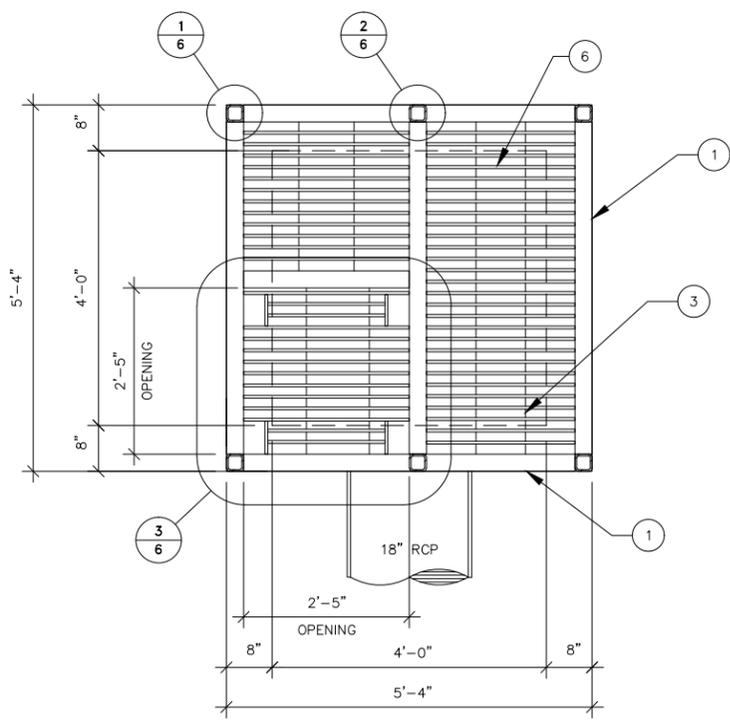
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STORM SEWER OUTFALL PLAN & PROFILE**

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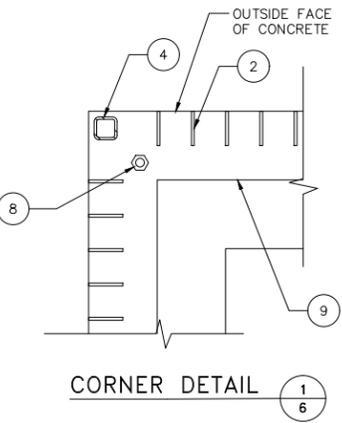
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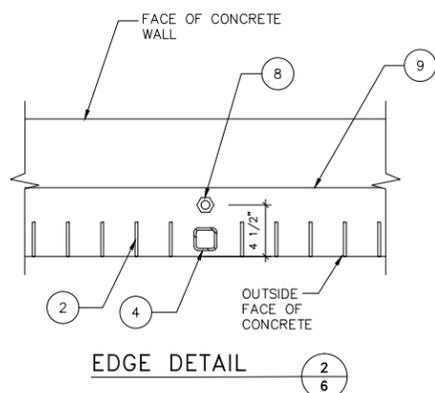
TOP TRASH RACK DETAIL PLAN VIEW

ELEMENT KEY

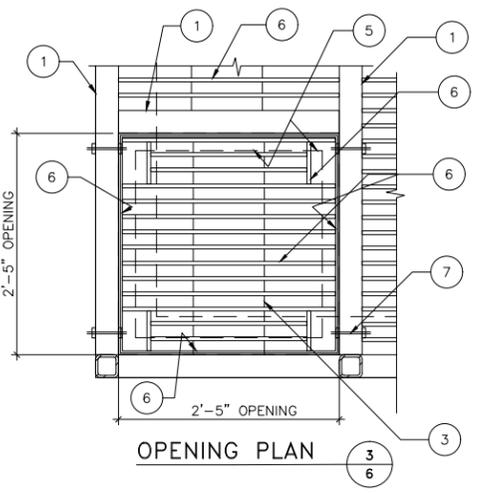
- 1 HSS 3x3x1/4
- 2 1/4"x3" PLATE @ 3"o.c. MAXIMUM
- 3 1/2" DIA BAR @ 10"o.c. MAXIMUM
- 4 HSS2x2x1/4
- 5 1/4"x2" HORIZONTAL PLATE WELDED TO SIDE OF HSS3x3x1/4
- 6 1/4"x2" PLATE @ 2"o.c. MAXIMUM
- 7 3/8" DIA. SST BOLT
- 8 3/8" DIA. SST ADHESIVE ANCHOR @ 24"o.c. MAXIMUM
- 9 3/8"x5 1/2"x CONT. PLATE



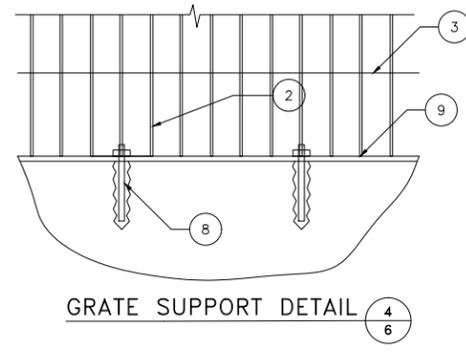
CORNER DETAIL



EDGE DETAIL



OPENING PLAN



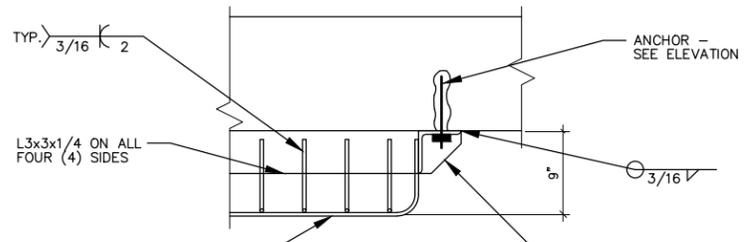
GRATE SUPPORT DETAIL

STRUCTURAL STEEL

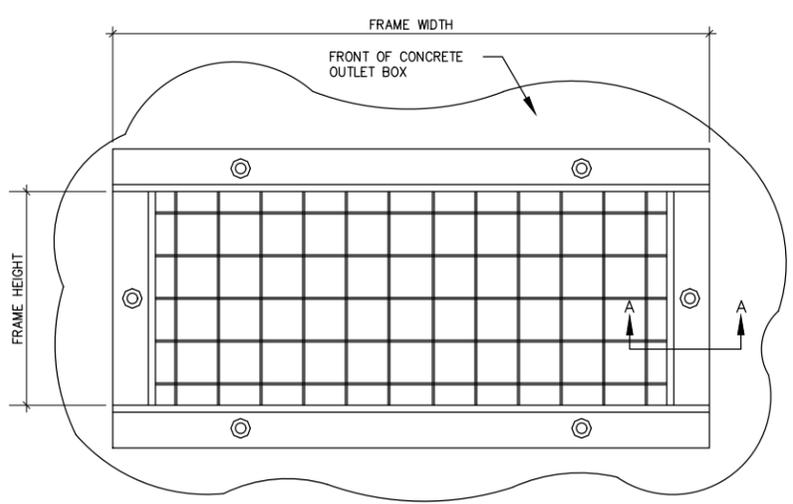
- STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:
 BARS & PLATES - ASTM A36 THREADED BOLTS - ASTM A301
 ANCHOR BOLTS - ASTM A36 THREADED BOLTS - ASTM A36
 WELDS - E70 XX
 ALL STEEL SHALL BE GALVANIZED
- ALL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE AISC "LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS" AND "CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES", CURRENT EDITION.
- ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER IN ACCORDANCE WITH A.W.S. CODE FOR WELDING IN BUILDING CONSTRUCTION. SURFACES FOR FIELD WELDED MATERIAL SHALL BE PROPERLY PREPARED PRIOR TO BEING WELDED TO ASSURE A GOOD QUALITY WELD. REMOVE PAINT, GREASE, DIRT, ETC.
- ALL STEEL MEMBERS SHALL BE WELDED WITH A 3/16" CONTINUOUS FILLET WELD (UNLESS OTHERWISE NOTED)
- ALL WELDS SHALL BE TOUCHED UP WITH GALVANIZING COMPOUND.

PAINT:

SURFACE	TNEMEC COATING SYSTEM	COVERAGE SQ. FT./GAL	THICKNESS /COAT DMT	COLOR
STEEL	SHOP PRIMER 69-1255 BEIGE	277	4.0	BEIGE
(OUTDOORS)	1 COAT 69 H.B. EPOXY	221	5.0	BLACK
	1 COAT 74 ENDURA-SHELD IV	310	3.0	BLACK



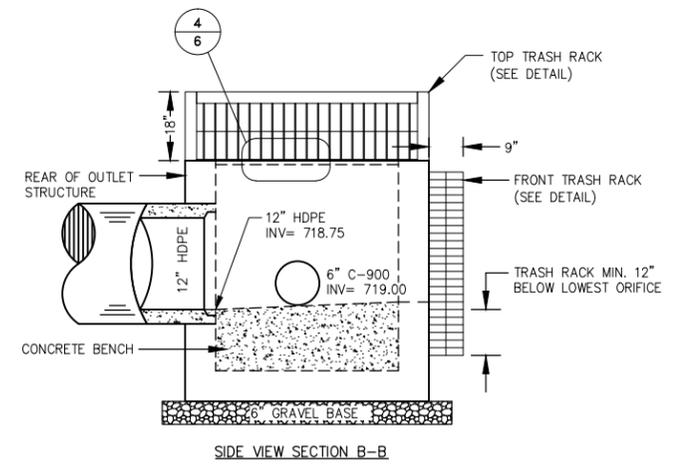
SECTION A-A



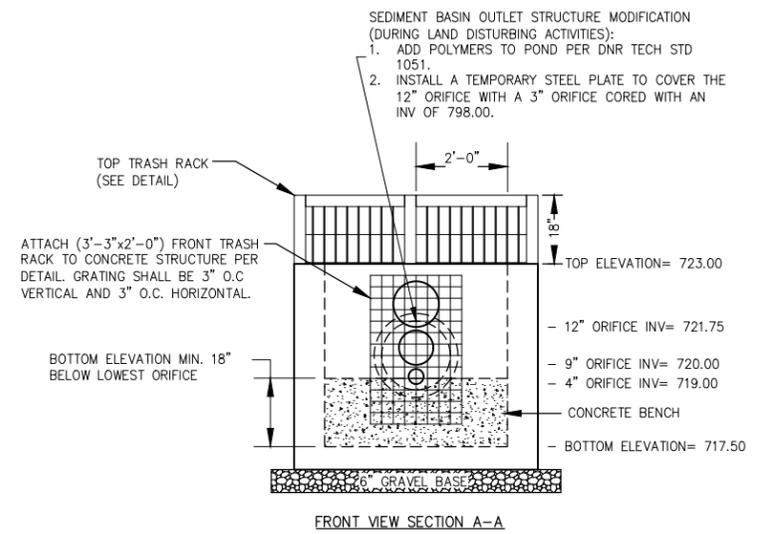
FRONT TRASH RACK DETAIL-ELEVATION VIEW

NOTES:

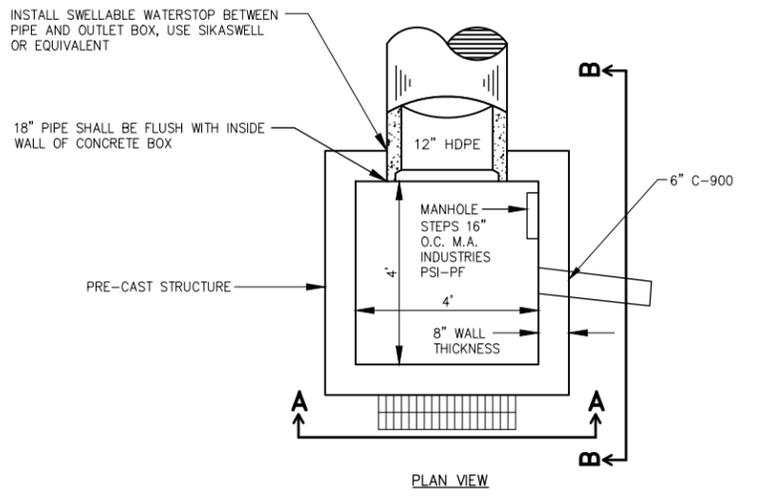
- WHEN FRAME HEIGHT IS 24 INCHES OR LESS, PROVIDE (1) ANCHOR PER VERTICAL LEG, OTHERWISE PROVIDE TWO OR MORE ANCHORS @ 24" O.C. MAX.
- WHEN FRAME WIDTH IS 12" OR LESS, PROVIDE (1) ANCHOR PER HORIZONTAL LEG, OTHERWISE PROVIDE TWO OR MORE ANCHORS @ 24" O.C. MAX.
- PROVIDE 1/2" EPOXY ANCHOR EMBEDDED 4" MIN. INTO CONCRETE WHERE REQUIRED BY THIS DRAWING OR NOTES.
- SEE OUTLET STRUCTURE DETAIL FOR TRASH RACK FRAME SIZE.



SIDE VIEW SECTION B-B



FRONT VIEW SECTION A-A



PLAN VIEW

PAPERMAKER POND OUTLET STRUCTURE DETAIL

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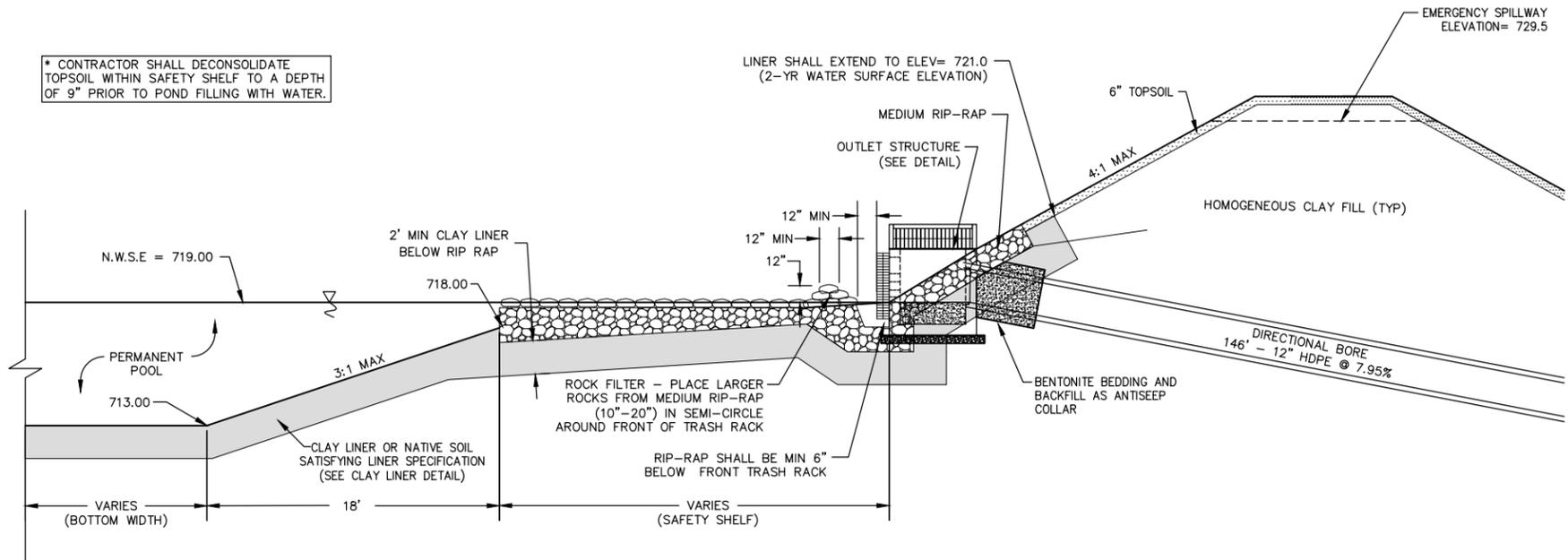
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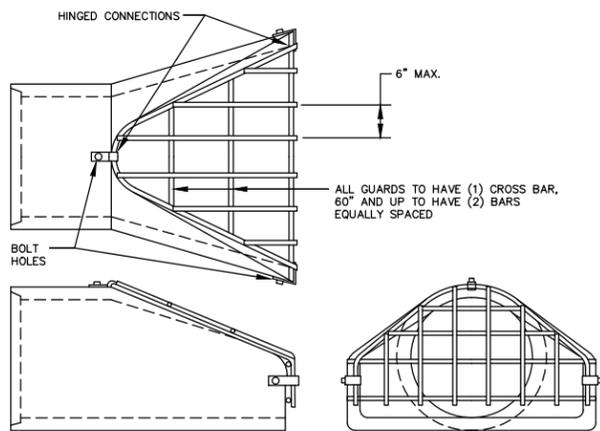
NOTES:

1. POND CROSS SECTION REPRESENTS STANDARD DESIGN. ELEVATIONS, ETC. CAN BE FOUND ON RESPECTIVE PLAN SHEETS
2. ALL SHOWN ELEVATIONS ARE TO FINISH GRADE.
3. STRIP ALL VEGETATION, STUMPS, ROOTS & TOPSOIL PRIOR TO EMBANKMENT CONSTRUCTION.
4. CONSTRUCT EMBANKMENT HEIGHT 4" HIGHER THAN FINAL ELEVATION TO ACCOUNT FOR ANTICIPATED SETTLEMENT.
5. PLACE 12" OF TOPSOIL IN AREAS OF SHALLOW MARSH WETLAND PLANTINGS
6. PLACE 6" OF TOPSOIL IN AREAS OF WET-TO-WET MESIC PRAIRIE AND MESIC PRAIRIE.

* CONTRACTOR SHALL DECONSOLIDATE TOPSOIL WITHIN SAFETY SHELFF TO A DEPTH OF 9" PRIOR TO POND FILLING WITH WATER.



POND TYPICAL CROSS SECTION

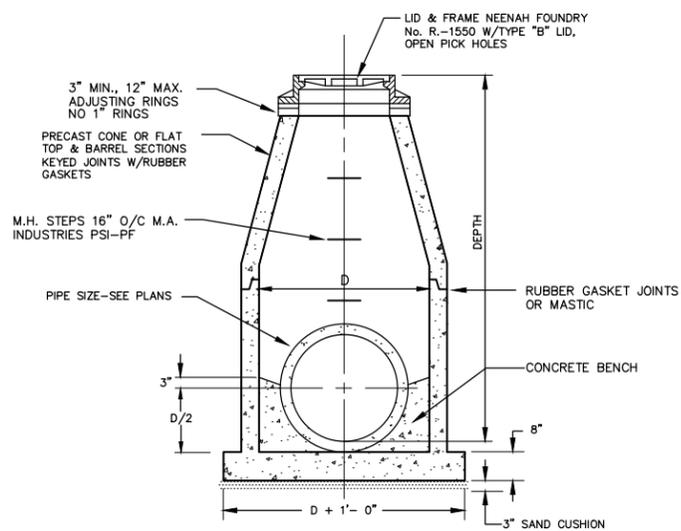


HOT DIP GALVANIZED PER ASTM-A153

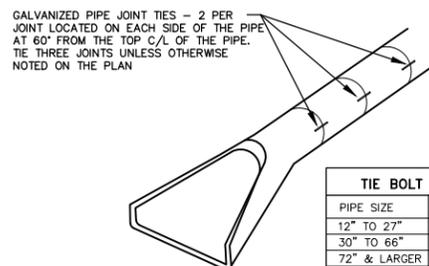
		STANDARD DESIGN			HEAVY DESIGN			
	PIPE SIZE	HOLE DIA. REQ'D.	BOLT DIA.	BAR SIZE	PIPE SIZE	HOLE DIA. REQ'D.	BOLT DIA.	BAR SIZE
ROUND	12"-24"	3/4"	5/8"	5/8"	12"-18"	3/4"	5/8"	3/4"
	27"-48"	7/8"	3/4"	3/4"	21"-48"	7/8"	3/4"	1"
	54"-90"	1 1/8"	1"	1"	54"-90"	1 1/8"	1"	1 1/4"
ARCH	22"-29"	3/4"	5/8"	5/8"	22"	3/4"	5/8"	3/4"
	36"-59"	7/8"	3/4"	3/4"	29"-59"	7/8"	3/4"	1"
	65"-88"	1 1/8"	1"	1"	65"-88"	1 1/8"	1"	1 1/4"

BOLT LG. = PIPE WALL THK. + 2 1/2"

**TRASH GUARD FOR FLARED ENDS
(TO BE INSTALLED ON ALL APRON ENDWALLS, EXCEPT CULVERTS)**



STORM SEWER M.H. DETAIL



CONCRETE APRON DETAIL

TIE BOLT REQUIREMENTS		
PIPE SIZE	BAR DIA.	BOLTS
12" TO 27"	5/8"	32"
30" TO 66"	3/4"	32"
72" & LARGER	1"	32"

CLAY LINER SPECIFICATIONS (TYP.)

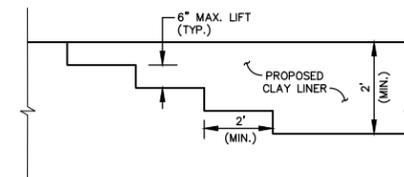
LINER THICKNESS = 2 FEET
 IN PLACE HYDRAULIC CONDUCTIVITY = 1 X 10⁻⁷ CM/SEC OR LESS
 MINIMUM OF 50% BY WEIGHT WHICH PASSES THE 200 SIEVE
 AVERAGE LIQUID LIMIT OF 25 OR GREATER, NONE LESS THAN 20
 AVERAGE PLASTICITY INDEX OF 12 OR GREATER, NONE LESS THAN 10

ALL CLAY LAYERS IN THE LINER TO BE CONSTRUCTED IN LIFT HEIGHTS NO GREATER THAN 6 INCHES AFTER COMPACTION USING FOOTED COMPACTION EQUIPMENT HAVING FEET AT LEAST AS LONG AS THE LOOSE LIFT HEIGHT. CLAY IS TO BE DISKED OR OTHERWISE MECHANICALLY PROCESSED BEFORE COMPACTION TO BREAK UP CLODS AND ALLOW FOR MOISTURE ADJUSTMENT. CLOD SIZE TO BE NO GREATER THAN 4 INCHES.

A SUFFICIENT NUMBER OF PASSES OF THE COMPACTION EQUIPMENT IS TO BE MADE OVER EACH LIFT OF CLAY TO ENSURE COMPLETE REMOLDING OF THE CLAY.

ALL CLAY TO BE COMPACTED TO 90% MODIFIED OR 95% STANDARD PROCTOR DENSITY AT A MOISTURE CONTENT OF AT LEAST 2% WET OF OPTIMUM IF USING THE MODIFIED PROCTOR METHOD AND WET OF OPTIMUM IF USING THE STANDARD PROCTOR METHOD, BASED ON THE CHARACTERISTICS OF THE APPROPRIATE PROCTOR CURVE FOR THE CLAY BEING PLACED. THE CLAY LINER IS TO BE KEYED TOGETHER TO FORM A CONTINUOUS CLAY SEAL, SEE DETAIL.

CLAY LINER SHALL BE PLACED OVER NATIVE SOILS THAT DO NOT SATISFY THE CLAY LINER SPECIFICATIONS. A GEOTECHNICAL ENGINEER SHALL DETERMINE WHICH SOILS DO NOT SATISFY THE CLAY LINER SPECIFICATIONS. THE GEOTECHNICAL ENGINEER SHALL INSPECT SOILS WITHIN THE PERMANENT POOL AND UP TO THE POND'S 2-YEAR, 24-HOUR WATER SURFACE ELEVATION (708.8) ON COMPLETION OF THE LINER. A GEOTECHNICAL ENGINEER REGISTERED IN WISCONSIN SHALL PROVIDE AN AFFIDAVIT INDICATING IF THE CLAY LINER SATISFIES THESE SPECIFICATIONS.



CLAY LINER DETAIL

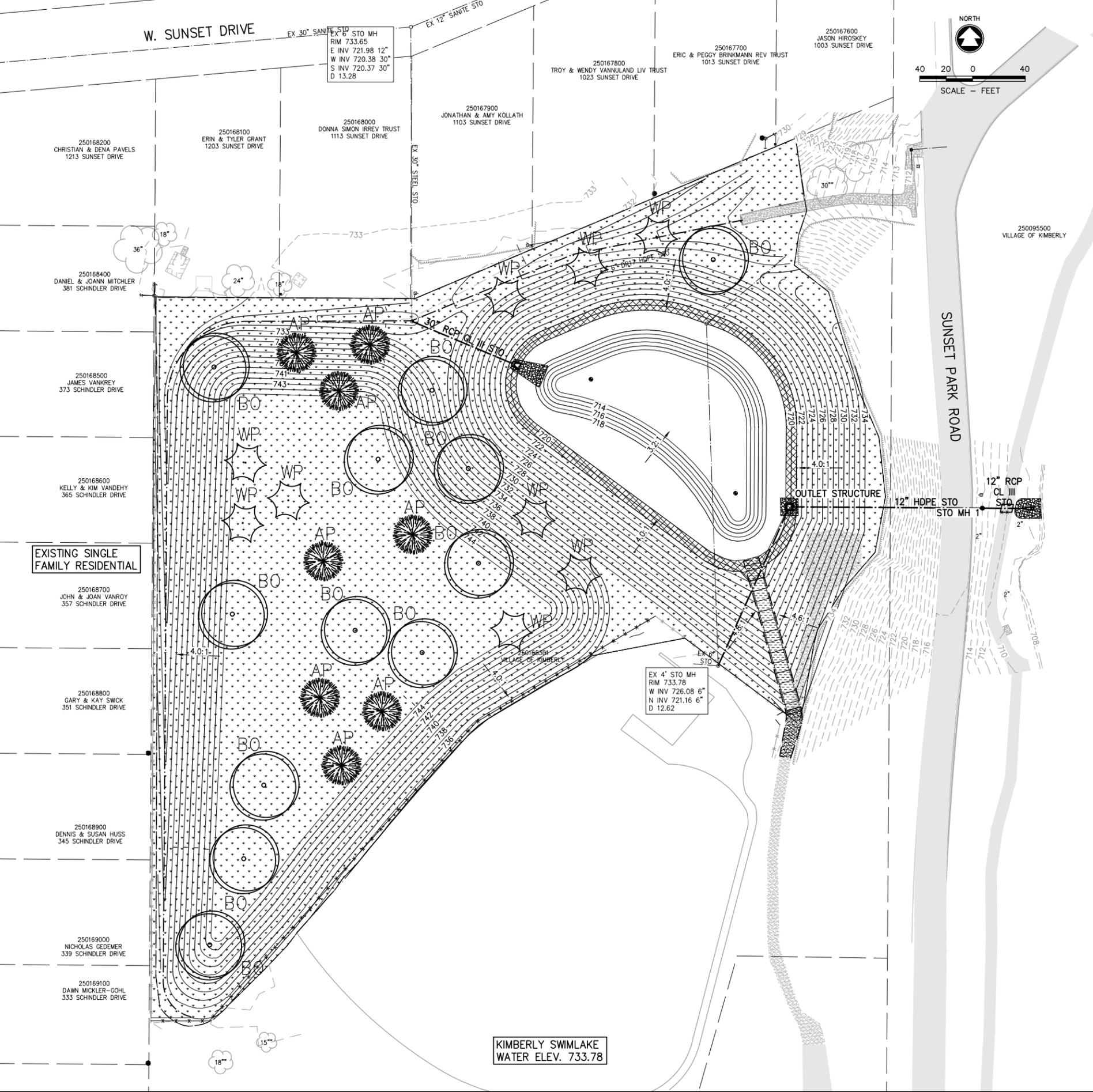
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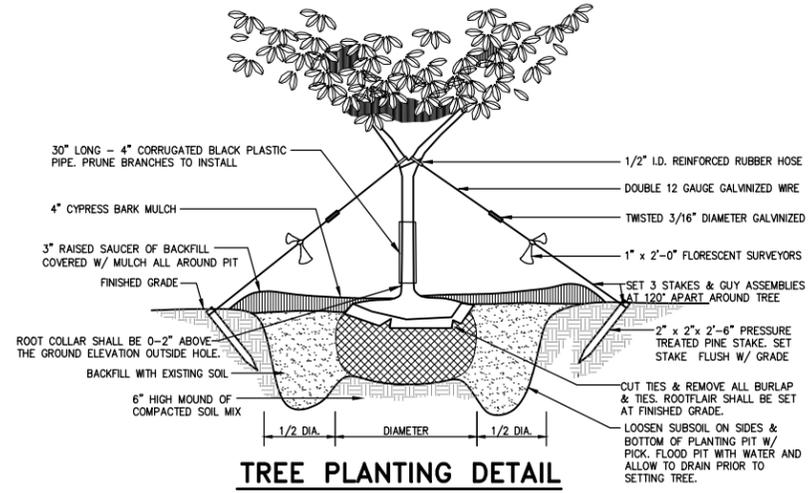
LANDSCAPING SCHEDULE

- WET TO WET-MESIC PRAIRIE PLANTING (0.12 AC)
- MESIC PRAIRIE PLANTING (4.08 AC)

NOTES:

1. SEE SECTION 32 92 00.00 (LANDSCAPING) OF THE SPECIFICATIONS MANUAL FOR ALL SEED MIXES.
2. TOPSOIL SHALL BE SPREAD TO THE FOLLOWING DEPTHS:
 - 6" TOPSOIL FOR WET TO WET-MESIC PRAIRIE AND MESIC PRAIRIE

TREE SCHEDULE					
QUANTITY	SYMBOL	SIZE	COMMON NAME	LATIN NAME	CONDITION
11	BO	1.00"-1.50"-DIA	BUR OAK	Quercus macrocarpa	POTTED
9	WP	4' HEIGHT	WHITE PINE	Pinus Strobus	B&B
11	AP	4' HEIGHT	AUSTRIAN PINE	Pinus Nigra	B&B



PAPERMAKER POND
 VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
 LANDSCAPING PLAN

DESIGNED
PTK

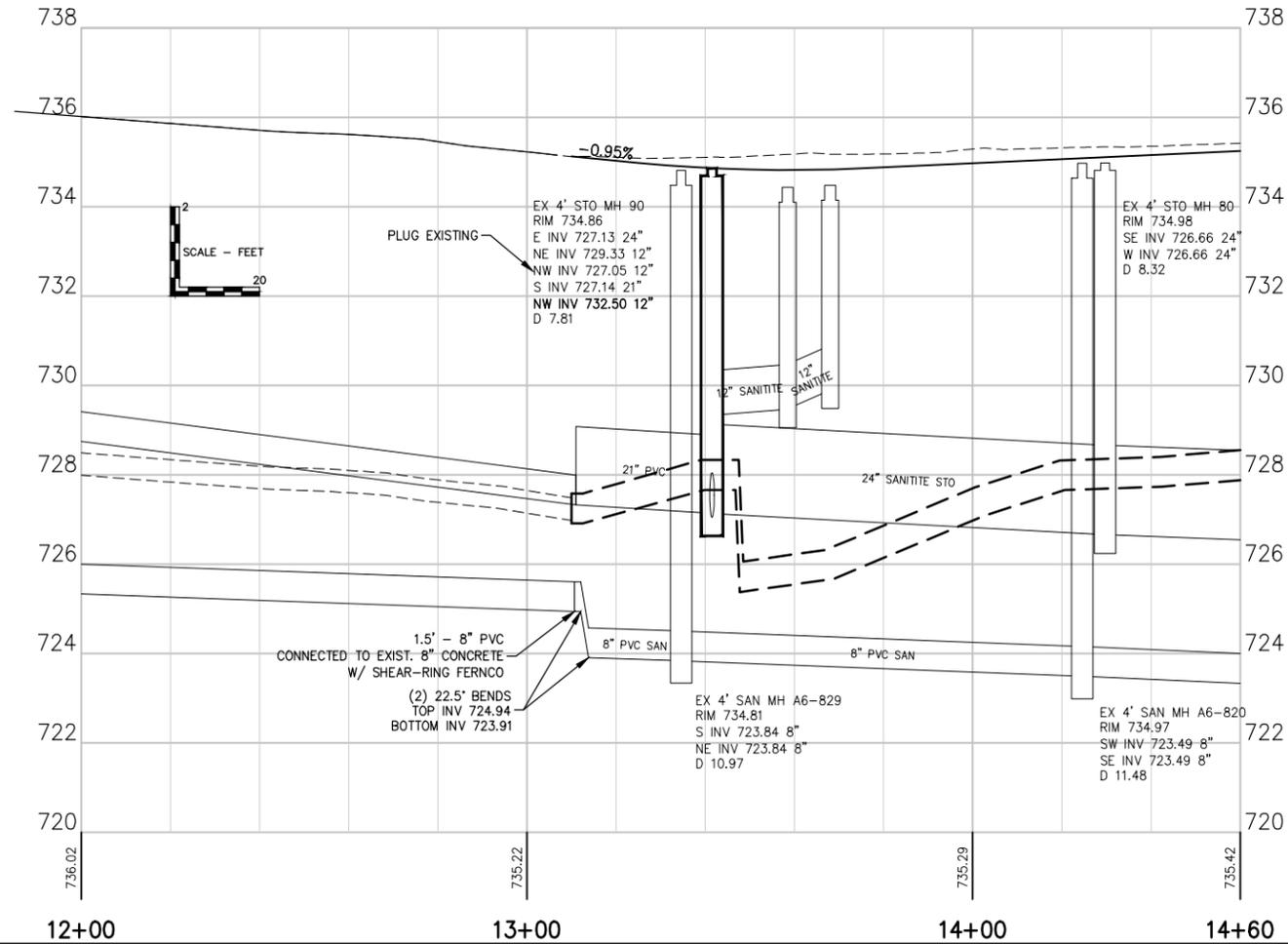
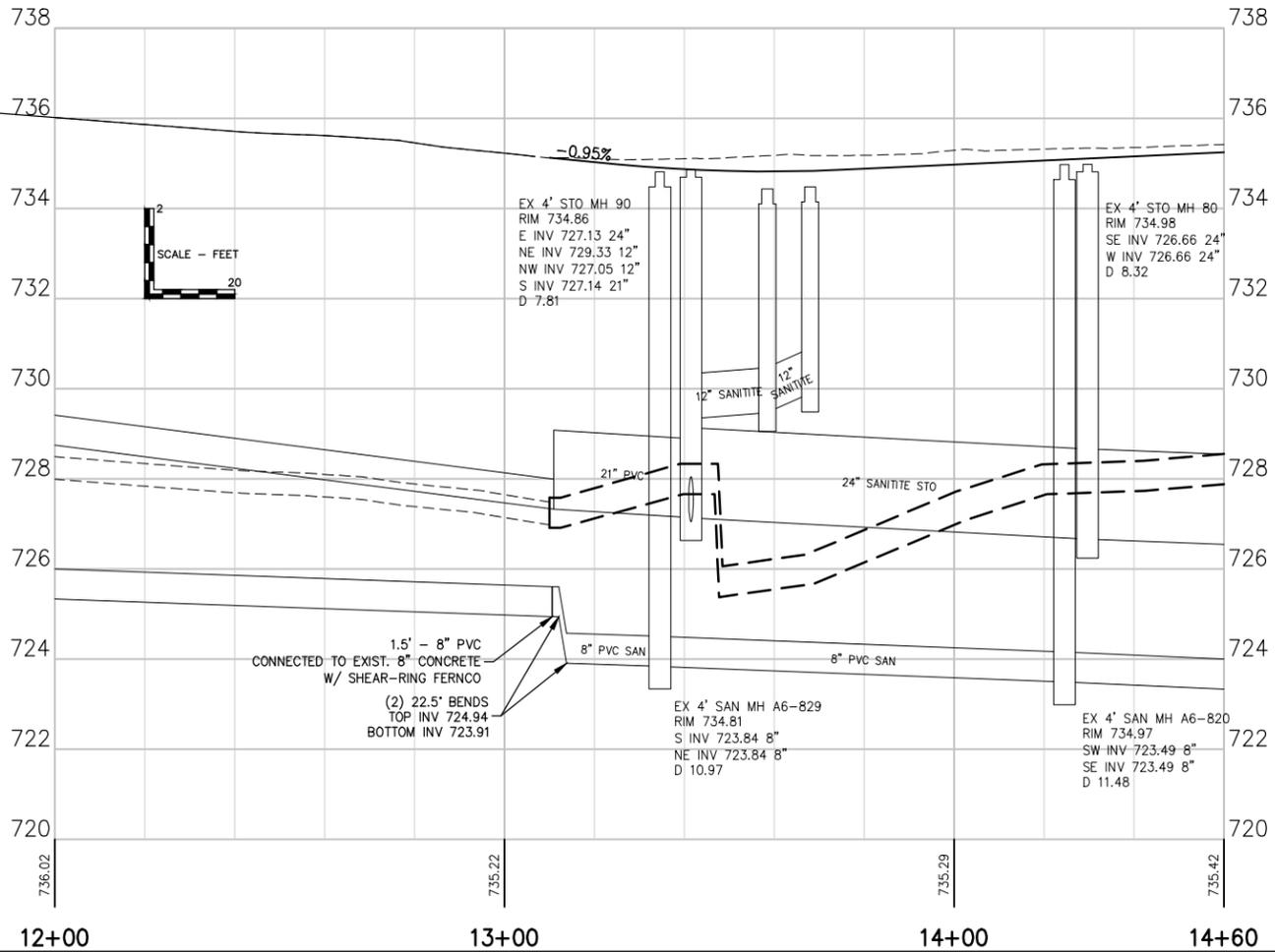
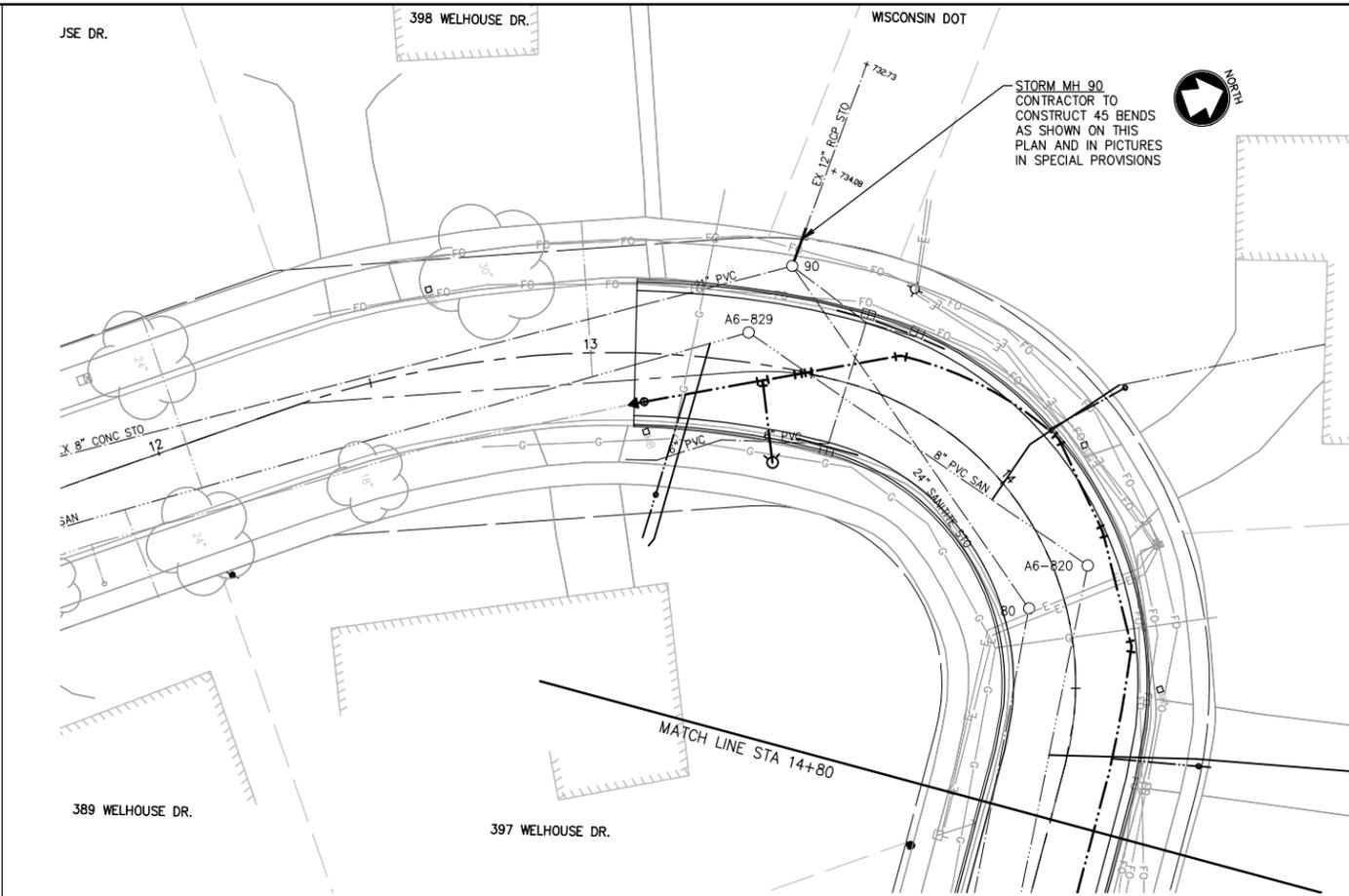
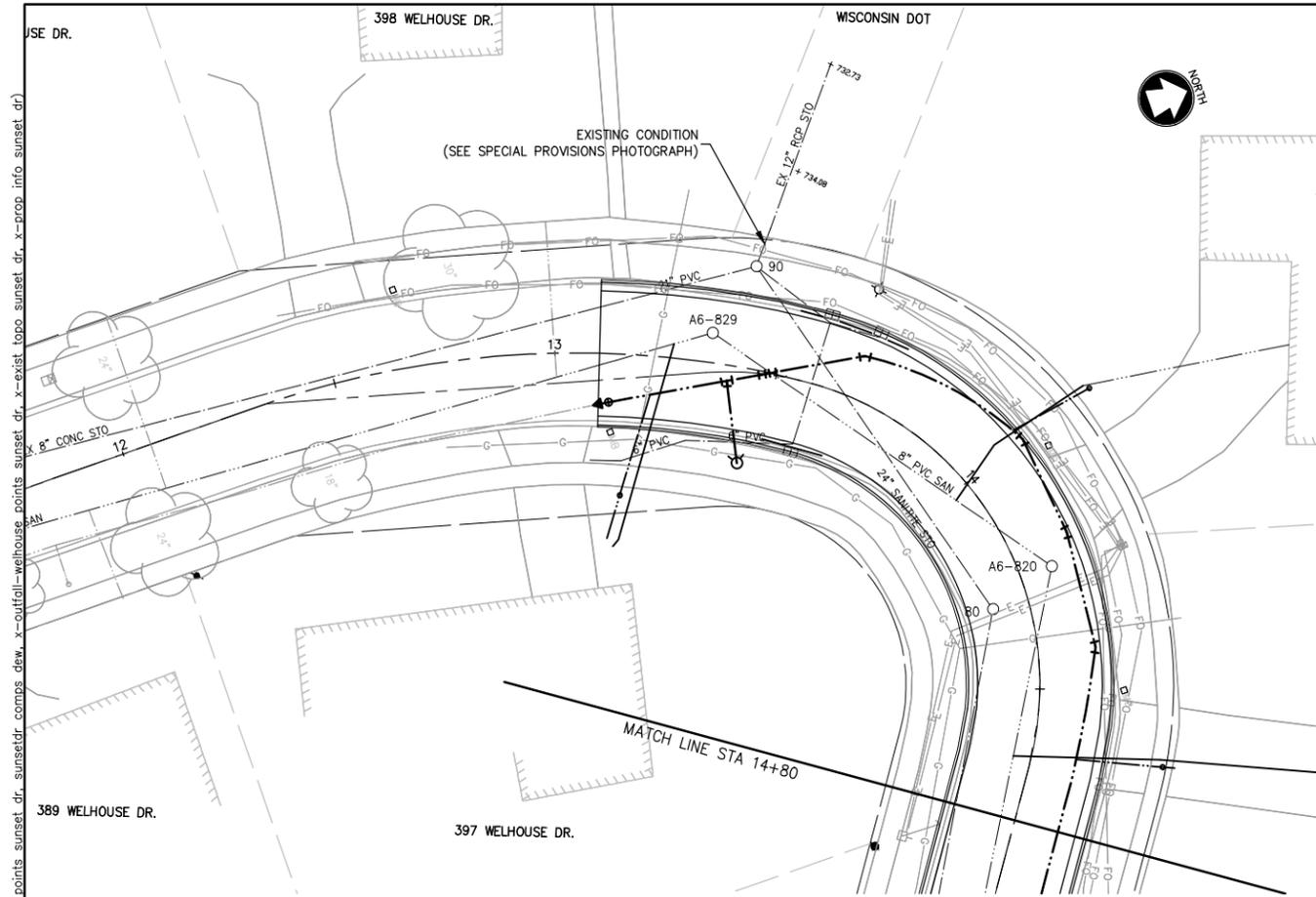
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K0001-09-25-00156

DATE
MARCH 2025

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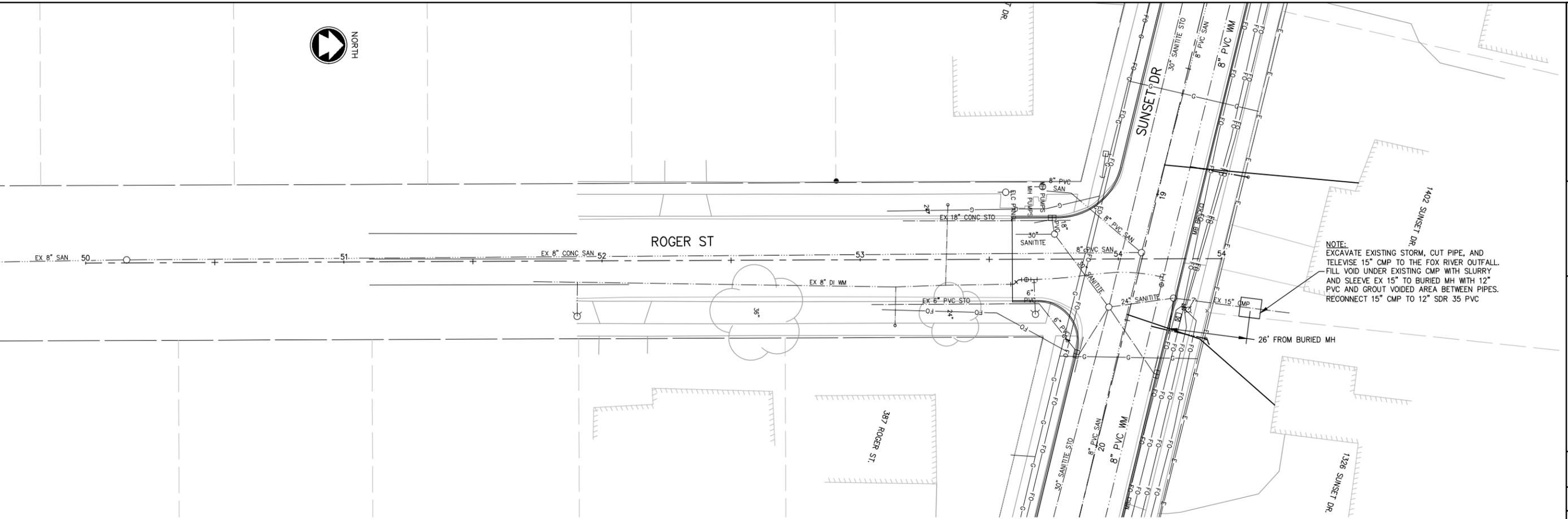
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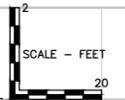
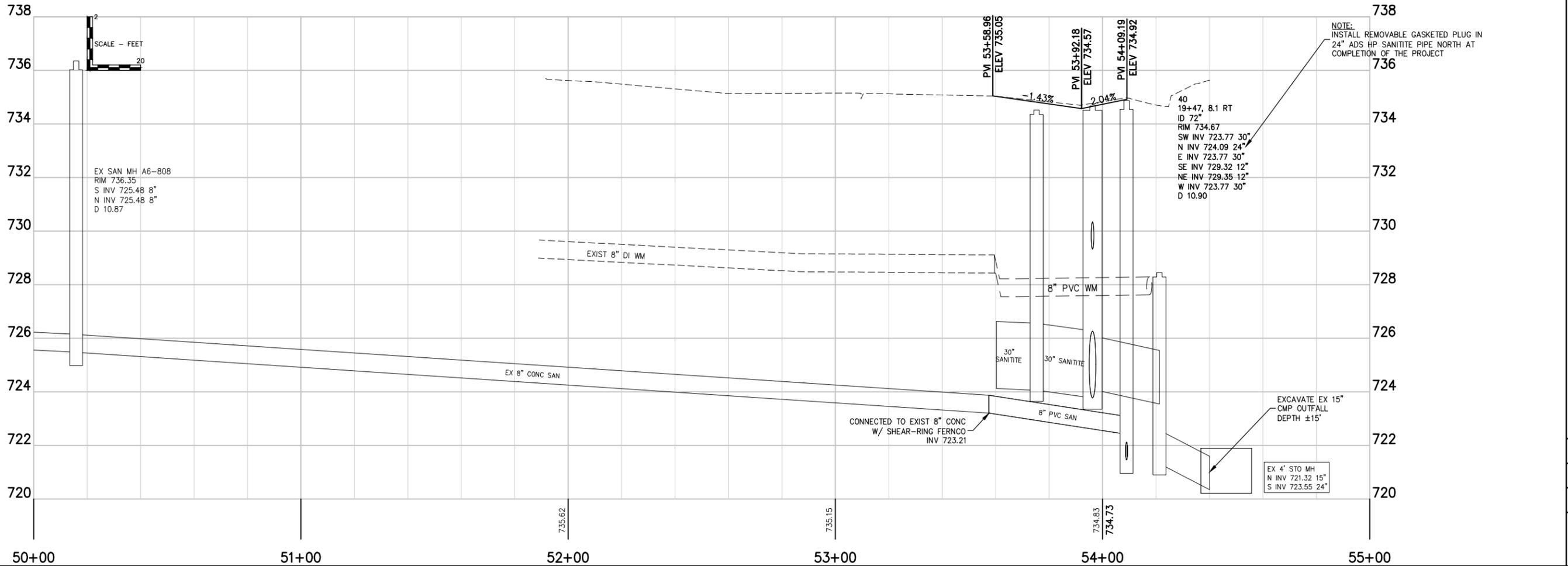
PAPERMAKER POND
 VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
 SUNSET DRIVE

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DATE MARCH 2025	
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NOTE:
EXCAVATE EXISTING STORM, CUT PIPE, AND TELEVIEW 15" CMP TO THE FOX RIVER OUTFALL. FILL VOID UNDER EXISTING CMP WITH SLURRY AND SLEEVE EX 15" TO BURIED MH WITH 12" PVC AND GROUT VOIDED AREA BETWEEN PIPES. RECONNECT 15" CMP TO 12" SDR 35 PVC



EX SAN MH A6-808
RIM 736.35
S INV 725.48 8"
N INV 725.48 8"
D 10.87

40
19+47, 8.1 RT
ID 72"
RIM 734.67
SW INV 723.77 30"
N INV 724.09 24"
E INV 723.77 30"
SE INV 729.32 12"
NE INV 729.35 12"
W INV 723.77 30"
D 10.90

NOTE:
INSTALL REMOVABLE GASKETED PLUG IN 24" ADS HP SANITITE PIPE NORTH AT COMPLETION OF THE PROJECT

EXCAVATE EX 15" CMP OUTFALL DEPTH ±15'

EX 4" STO MH
N INV 721.32 15"
S INV 723.55 24"

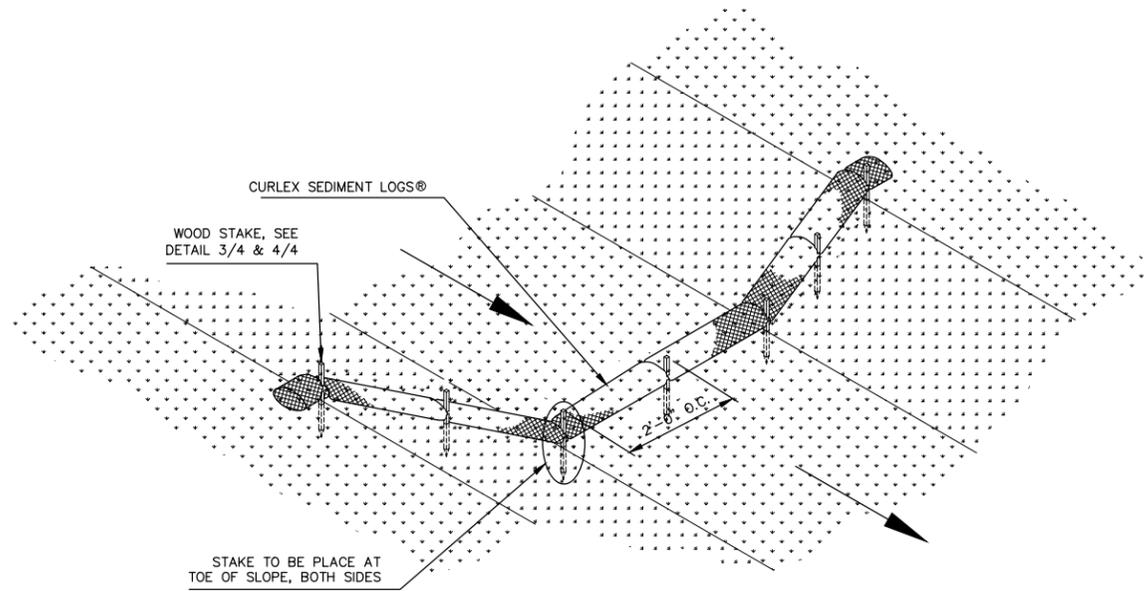
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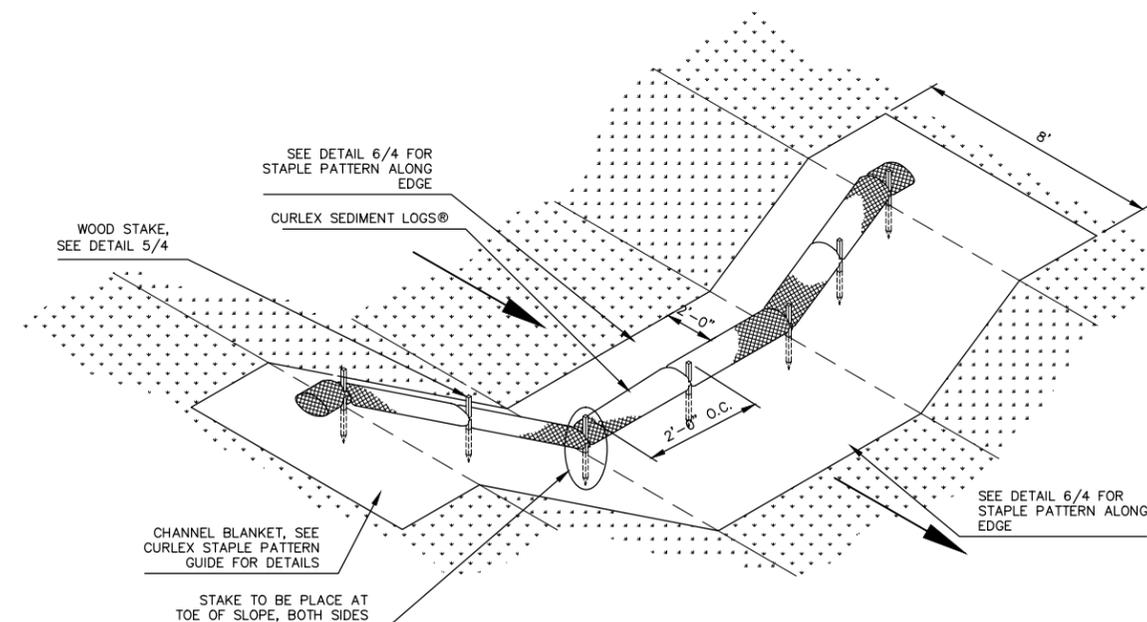
**PAPERMAKER POND
VILLAGE OF KIMBERLY, OUTAGAMIE COUNTY, WI
SUNSET DRIVE**

DESIGNED PTK	DRAWN JJJ
PROJECT NO. K0001-09-25-00156	
DATE MARCH 2025	
SHEET NO. 15	

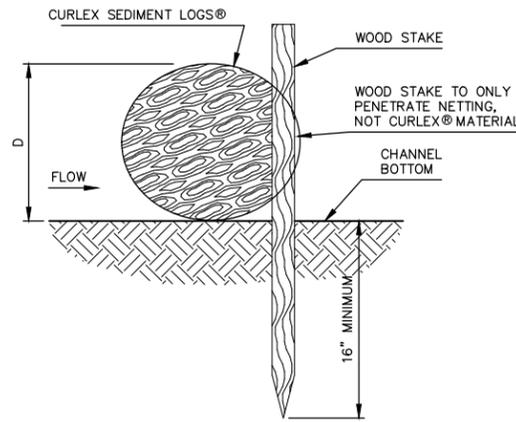
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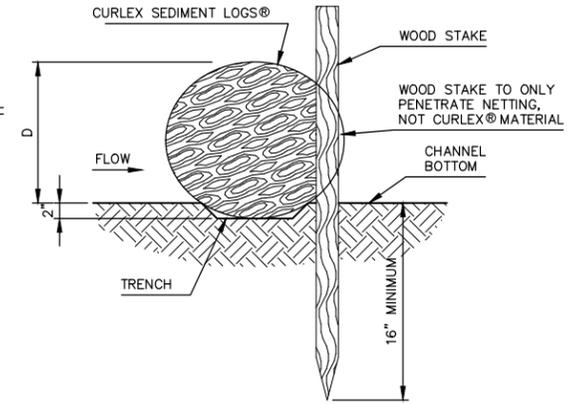
**CURLEX SEDIMENT LOGS®
DETAIL (NO BLANKET)**
NO SCALE



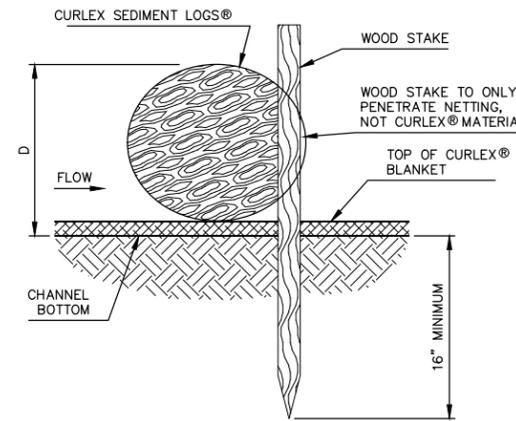
**CURLEX SEDIMENT LOGS®
DETAIL (WITH BLANKET)**
NO SCALE



**STAKE DETAILS
(NO TRENCH)**
NO SCALE



**STAKE DETAIL
(WITH TRENCH)**
NO SCALE

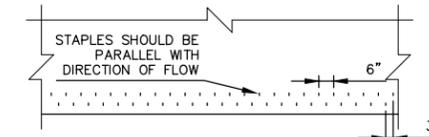


**STAKE DETAILS
(NO TRENCH)**
NO SCALE

NOTE: TRENCH OPTION IS MOST APPLICABLE IN LOOSE, UNCONSOLIDATED SOILS.

1-1/8" x 1-1/8" x 30" WOODEN STAKES ARE RECOMMENDED FOR 6", 9", AND 12" SEDIMENT LOGS.

1-1/8" x 1-1/8" x 48" WOODEN STAKES ARE RECOMMENDED FOR 20" SEDIMENT LOGS.



**CHANNEL TERMINATION
PLAN**
NO SCALE

$$\left[\frac{\text{DISTANCE BETWEEN CHANNEL BOTTOM AND TOP OF INSTALLED CURLEX SEDIMENT LOGS® (D)(ft)}}{\text{CHANNEL GRADIENT (\%)}} \right] \times 100 = \text{CURLEX SEDIMENT LOGS® SPACING (ft)}$$

**RECOMMENDED PLACEMENT INTERVAL
BETWEEN CURLEX SEDIMENT LOGS®**

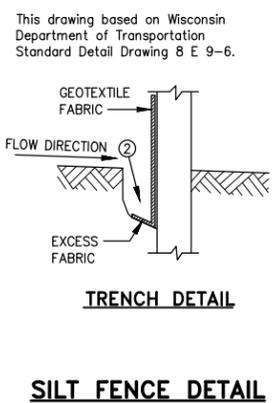
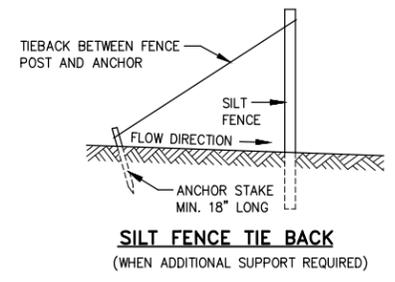
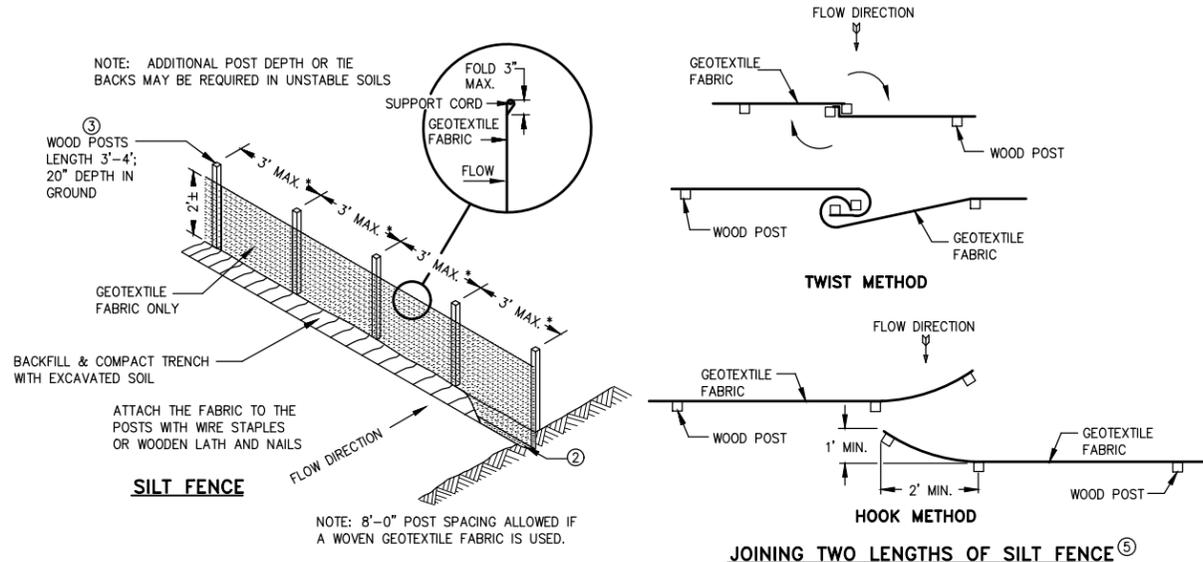
SEDIMENT LOG DETAIL

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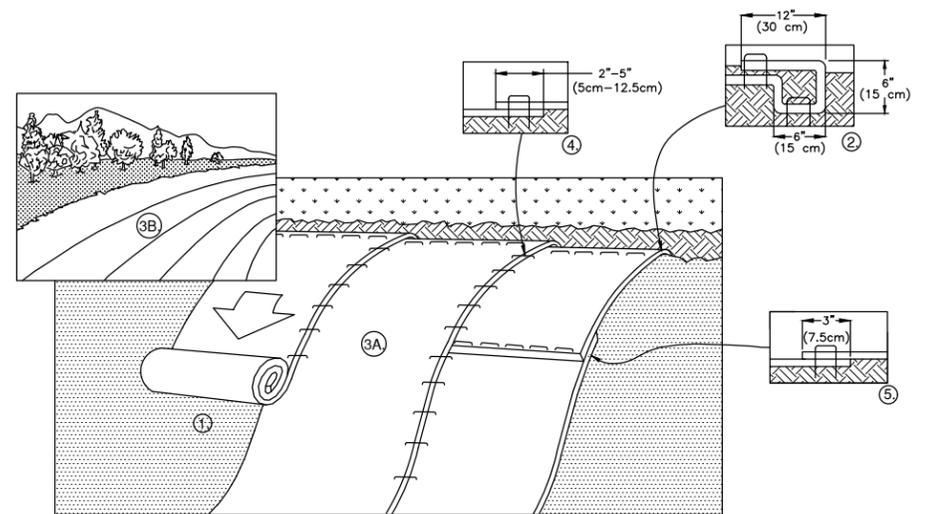
NO.	DATE	REVISION

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PROJECT NO. K0001-09-25-00156	
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SHEET NO.	

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- GENERAL NOTES**
- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
 - ② TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
 - ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY
 - ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
 - ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



- SLOPE EROSION MAT SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH WISCONSIN DEPARTMENT OF NATURAL RESOURCES TECHNICAL STANDARD NO. 1052 AND MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS MORE STRINGENT.
1. PREPARE TOPSOIL BEFORE INSTALLING MATS, INCLUDING ANY NECESSARY FERTILIZER AND SEED. THE MAT SHALL BE IN FIRM AND CONTINUOUS/INTIMATE CONTACT WITH THE SOIL. THE MAT SHALL BE ANCHORED, OVERLAPPED, STAKED AND ENTRENCHED, PER THE MANUFACTURER'S RECOMMENDATIONS. THE MANUFACTURER'S RECOMMENDATIONS SUPERCEDE THIS DETAIL AND NOTES 2,3,4 AND 5.
 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE MAT IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF MAT EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE MAT WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30CM) PORTION OF MAT BACK OVER SEED AND COMPACTED SOIL. SECURE MAT OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30CM) APART ACROSS THE WIDTH OF THE MAT.
 3. ROLL THE MATS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. MATS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL MATS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 4. THE EDGES OF PARALLEL MATS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5CM-12.5CM) OVERLAP DEPENDING ON MAT TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING MAT (MAT BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED MAT.
 5. CONSECUTIVE MATS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30CM) APART ACROSS ENTIRE MAT WIDTH.

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