

**PLANS AND SPECIFICATIONS
For
EL NUEVO TRAILER PARK WATER & SEWER REPAIR
CITY OF GAYLORD, MINNESOTA**

CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: SCOTT KOLBINGER

SIGNATURE: 

DATE: 1/14/2025 LICENSE NUMBER: 54153

**THE ABOVE HEREBY CERTIFY THAT THESE PLANS & SPECIFICATIONS
WERE PREPARED BY THEM OR UNDER THEIR DIRECT
SUPERVISION, AND THAT THEY ARE DULY
REGISTERED PROFESSIONAL ENGINEER(S) UNDER THE
LAWS OF THE STATE OF MINNESOTA**

JANUARY 2025

Project No. 2416-00827

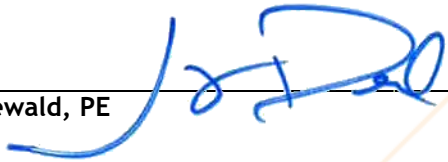


Certifications Page
For

El Nuevo Trailer Park Water & Sewer Repair
Gaylord, Minnesota

I HEREBY CERTIFY THAT THESE DIVISION 01, 02, 31, 32 AND 33 SPECIFICATIONS WERE PREPARED BY ME OR UNDER THEIR DIRECT SUPERVISION, AND THAT THEY ARE DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Jeremy Dewald, PE



DATE:

1/14/2025

REG. NO. 56225

Project No. 2416-00827



Plans and Specifications for
EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 Gaylord, Minnesota

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SECTION 00100

ADVERTISEMENT FOR BIDS

EL NUEVO TRAILER PARK WATER AND SEWER REPAIR EL NUEVO AMANECER COOPERATIVE GAYLORD, MINNESOTA

Sealed bids will be received by the El Nuevo Amanecer Cooperative, at the office of KLJ Engineering LLC, 300 23rd Ave E, Suite 100, West Fargo, ND 58078 until **2:00 PM CT, February 6, 2025**, at which time they will be privately opened for the furnishing of materials, labor, equipment and skill required for the construction of water service, sewer lining, pavement repair and incidental items in and for said El Nuevo Amanecer Cooperative, as is more fully described and set forth in the plans and specifications therefore, which are now on file in the office of KLJ Engineering.

Bids shall be upon cash payment on the following estimated quantities and types of work:

Water Meter Manhole – 1 EA, 3” Gate Valve – 8 EA, 3” PVC Watermain – 454 LF, Bore Pipe 3” Dia, PVC – 878 LF, Water Services – 31 EA, Line Sanitary Sewer Piping – 1440 LF, Line Sanitary Sewer Manhole – 7 EA, and other miscellaneous items. Alternate 1 – asphalt milling and overlay, Alternate 2 – Pavement removal, asphalt pavement

The contract documents are on file and may be examined at the following:

KLJ Engineering
300 23rd Ave E, Suite 100
West Fargo, North Dakota 58078

Complete digital project bidding documents are available at www.kljeng.com “Projects for Bid” or www.questcdn.com. You may download the digital plan documents for \$22 by inputting Quest project #9487229 on the website’s Project Search page. Please 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 project documents is also available for a non-refundable price of \$57 per set at KLJ, 300 23rd Ave E, West Fargo, ND 58078. Please contact us at 701-232-5353 if you have any questions.

Bidders are encouraged to attend and participate in a pre-bid conference to be held at a time and place as described in the Instruction to Bidders. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

All bids will be contained in a sealed envelope, as above provided; plainly marked showing that such envelope contains a bid for the above project. All bids are to be submitted on the basis of cash payment for the work and materials. Each bid shall be accompanied by a bid security in a sum equal to five per cent (5%) of the full amount of the bid in accordance with the Instructions

to Bidders. The bid security shall be in the form of a Bid Bond, certified check or cashier's check payable to the El Nuevo Amanecer Cooperative. The bid security is a guarantee that the bidder, if awarded the contract, will enter into a contract for the work described in the contract documents. A contract shall be awarded on the basis of the low bid submitted by a responsible and responsive bidder for the aggregate sum of all bid items. The successful Bidder will be required to furnish Contract Performance and Payment Bonds in the full amount of the contract.

The date by which Substantial Completion must be achieved is **October 15, 2025**, and the date by which readiness for final payment must be achieved is **November 15, 2025**. **Additionally, once Contractor mobilizes equipment to the project site, all work shall be completed within 75 days.**

The Owner reserves the right to reject any and all bids to waive any informality in any bid, to hold all bids for a period not to exceed 30 days from the date of opening bids, and to accept the bid deemed most favorable to the interest of the Owner.

Should the Contractor fail to complete the work within the time required herein or within such extra time as may have been granted by formal extensions of time approved by the Owner, the contract price will be reduced, as defined in the contract, every day that the completion of the work is delayed. The Contractor and his surety will be liable for any excess. Such payment will be as and for liquidated damages.

Dated this 9th day of January 2025

**El Nuevo Amanecer Cooperative
Gaylord, MINNESOTA**

s/Scott Kolbinger, PE
Project Manger

Published **1/15, 1/22, and 1/29, 2025**

SECTION 00200

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Bidder* – One who submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a bid to a Bidder.
 - B. *Engineer* – Shall mean KLJ Engineering LLC, West Fargo, North Dakota.
 - C. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - D. *Owner* – Shall mean El Nuevo Amanecer Cooperative.
 - E. *Successful Bidder* – The lowest responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.
 - F. Other terms used in the bidding documents and not defined elsewhere have the following meanings, which are applicable to both singular and plural thereof:
 - 1. Base Bid: Is the sum stated in the Bid for which the Bidder offers to perform work described in the Bidding Documents as Base, to which work may be added or from which work may be deleted for sums stated in alternate Bids.
 - 2. Alternate Bid: (Or alternate) is amount stated in Bid to be added or deducted from amount of Base Bid if corresponding change in work, as described in Bidding Documents, is accepted.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Engineer.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder’s qualifications to perform the Work, within five days of Owner’s request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.
- A. Each Bid must contain evidence of Bidder’s authority to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract.
- 3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder’s representations and certifications.

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

4.01 Subsurface and Physical Conditions

- A. The Supplementary Conditions identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.
 2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 Underground Facilities

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in

Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

- 4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.
- 4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.
- 4.06 A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
- B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.
- 4.07 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have

been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";

- E. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

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

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-Bid conference will be held at 11:00 a.m. local time on January 28, 2025 at the Gaylord City Library, 428 Main Ave, Gaylord, MN 55334. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

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

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

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

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent of Bidder's maximum Bid price and in the form of a Bid Bond issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions, certified check or cashier's check; made payable to the Owner.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or the stated holding period has expired, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The times for Substantial Completion and readiness for final payment are to be set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

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

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

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

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from Engineer.

13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternative, adjustment unit price item, and unit price item listed therein. In the case of optional alternatives the words “No Bid,” “No Change,” or “Not Applicable” may be entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder’s name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names and titles shall be typed or clearly printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form. Bids in which all issued Addenda are not acknowledged will be considered incomplete and will not be read.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

- 13.12 The Bidder may substitute a computer printed spreadsheet bid schedule for the Bid Schedule found in the Bid Form (Section 00300). The substitute schedule shall be attached to the last page of the supplied Bid form (Section 00300).
- A. The following information shall appear on top of each page of the computer printed bid schedule:
 - 1. Project Name
 - 2. Date of Bid Opening
 - 3. Location (as defined in Advertisement for Bids)
 - 4. Description of Work (from Advertisement for Bids)
 - 5. Page Number
 - 6. Bidder's Name and Address
 - 7. Acknowledgement of Addenda
 - B. The substitute bid schedule shall be printed on sheets of approximately the same size as the bid schedule in the Bid Form, and the words and numerals shall be clear and legible. Each page shall be arranged, numbered, and contain the same bid items as the corresponding bid schedule in the Bid Form. Column headings shall be the same as those in the standard Bid Schedule furnished with the specifications.
 - C. Each bid item shall be separated from the bid items above and below it by one or more blank spaces. Solid lines for separating columns and items are not required, but dashed lines may be placed either vertically or horizontally.
 - D. The total sum(s) of the bid shall be entered at the same relative location as on the standard Bid Schedule.
 - E. The Bidder, or authorized representative, shall sign the substitute bid schedule in ink on the last page of the computer printout. The signer's name and title shall be printed below or beside the signature. The person signing the schedule shall sign and complete the Affidavit in the Bidders Proposal, as normally required.
 - F. In case of discrepancies between item descriptions or quantities in the Bid Schedule on the Bid Form (Section 00300) and those on the computer printed bid schedule, the Bid Schedule on the Bid Form (Section 00300) will govern. Any omitted items or missed items will be considered as "zero", and no payment will be considered for that item.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Unit Price*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.02 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security other required documents.
- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement to Bid and shall be enclosed in an opaque sealed envelope, plainly marked with the Project title, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to the address shown on the Advertisement or Invitation to Bid.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.
- 16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder. Owner reserves the right to reject the Bid of any Bidder if Owner believes it would not be in the best interest of the Project to make award to that Bidder whether because Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Owner.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the lowest responsible Bidder whose Bid is in the best interests of the Project.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

- 20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement

and attached documents to Owner. After Owner's attorney has reviewed and approved the submitted documents, Owner shall deliver one fully signed counterpart to Successful Bidder.

ARTICLE 22 – STATE LAWS AND REGULATIONS

22.01 All applicable laws, ordinances and the rules and regulations of authorities having jurisdiction over construction of the project shall apply to the Contract throughout.

ARTICLE 23 – SURETY DEPOSITS

23.01 All out-of-state contractors on construction work over \$100,000 will be required to file an exemption from surety deposits by filling the SD-E form prior to the first progress payment.

ARTICLE 24 – WAGE DETERMINATION

24.01 All Contractors and Subcontractors shall conform to the labor laws of the State of Minnesota and all other laws, ordinances and legal requirements affecting their work in Minnesota. Pursuant to Minnesota Statute, "No laborer or mechanic employed directly upon the project work site by the Contractor or any Subcontractor, agent or other persons doing contracting to do all or part of the work shall be permitted or required to work more hours than the prevailing hours of labor, unless such laborer or mechanic is paid for all hours in excess for the prevailing hours at a rate of one and one-half (1-1/2) times his hourly basic rate of pay, nor shall be paid a lesser rate of wages than the prevailing wage rate in the same or most similar trade or occupation.

24.02 Information pertaining to the prevailing wage rates, prevailing hours of labor and hourly basic rates may be obtained from the Minnesota Department of Labor and Industry. Said wage rates must be posted in a least one (1) conspicuous place for the employees working on the project. Failure to do so, by any Contractor, Subcontractor or agent who after executing a contract in compliance with this section, pays to any laborer, workman, or mechanic employed directly on the project, a lesser wage for work done on the project than the prevailing wage rate, shall be subject to penalties, as prescribed by Local, State and Federal Laws.

ARTICLE 25 – RETAINAGE

25.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

SECTION 00300

BID FORM

PROJECT IDENTIFICATION

EL NUEVO TRAILER PARK WATER AND SEWER REPAIR, PROJECT NO. 2416-00827

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

SCOTT KOLBINGER, PE
PROJECT MANAGER
KLJ ENGINEERING
300 23RD AVE E, SUITE 100
WEST FARGO, ND 58078

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

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 30 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

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

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

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

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."
- E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- 1. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

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

ARTICLE 5 – BASIS OF BID

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

UNIT PRICE BID

Base Bid					
Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Mobilization	LS	1	\$	\$
2	Erosion Control	LS	1	\$	\$
3	Abandon 2" Watermain	LS	1	\$	\$
4	Remove Pavement	SY	845	\$	\$
5	Remove Trees	EA	1	\$	\$
6	Connect to Ex. Water	EA	1	\$	\$
7	Water Meter Manhole	EA	1	\$	\$
8	Watermain Fittings	EA	8	\$	\$
9	3" Gate Valve	EA	8	\$	\$
10	3" PVC Water Main	LF	454	\$	\$
11	Bore Pipe 3" Dia. PVC	LF	878	\$	\$
12	Water Services	EA	31	\$	\$
13	Spot Repair	EA	5	\$	\$
14	Deep Clean Sanitary Sewer	LF	1440	\$	\$
15	Line Sanitary Sewer Piping	LF	1440	\$	\$
16	Line Sanitary Sewer Manhole	EA	5	\$	\$
17	Repair Service Protusion	EA	1	\$	\$
18	48" Sanitary Manhole	EA	1	\$	\$
19	Reopen Services	EA	31	\$	\$
20	Temporary Sewage Bypass	LS	1	\$	\$
21	Asphalt Pavement	SY	845	\$	\$
22	Site Restoration	EA	6	\$	\$
Total of All Bid Prices					\$

Alternate 1					
Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	1.5" Mill & Overlay	SY	3162	\$	\$
2	Asphalt Patch	SY	842	\$	\$
Total of All Alternate 1 Bid Prices					\$

Alternate 2					
Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Remove Pavement	SY	3162	\$	\$
2	Asphalt Pavement	TON	703	\$	\$
3	6" Aggregate Base	CY	527	\$	\$
Total of All Alternate 2 Bid Prices					\$

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.

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

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

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

A. Required Bid security in the amount of 5% in the form of Bid Bond, Certified Check or Cashier’s Check, made payable to the Owner. The same is subject to forfeiture in the event of default of the undersigned;

B. Responsible Contractor Verification Form

ARTICLE 8 – DEFINED TERMS

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

BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

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

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

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

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

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in [State where Project is located] is
____ / ____ / ____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

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

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

RESPONSIBLE CONTRACTOR VERIFICATION

I am an owner or officer of _____ [name of bidder] ("Bidder"). I hereby verify that Bidder is in compliance with the minimum criteria required of a "responsible contractor" as that term is defined in Minnesota Statutes § 16C.285, subdivision 3, and as explained in the attached document entitled "Responsible Contractor Requirement."

I further agree that Bidder has received a signed statement under oath from each subcontractor and motor carrier that Bidder intends to use to perform work on the project verifying that the subcontractor and motor carrier meets the minimum criteria under Minn. Stat. § 16C.285, and that Bidder will furnish such statements to the contracting authority upon request. Bidder intends to retain the following first-tier subcontractors and motor carriers for work on this project:

_____	_____
_____	_____
_____	_____

If Bidder is awarded the contract for the project, I further agree that Bidder will submit the attached document entitled "Additional Subcontractor and Motor Carrier List" as required.

Signed this _____ day of _____, 20__

By: _____ [printed name]

_____ [title] of _____ [name of bidder]

STATE OF MINNESOTA)
) ss.
COUNTY OF _____)

Signed and sworn to before me on _____, 20__, by
_____.

Notary Public

(stamp)

ADDITIONAL SUBCONTRACTORS AND MOTOR CARRIERS LIST

PROJECT TITLE: _____

Pursuant to Minn. Stat. § 16C.285, subd. 5, the prime contractor must submit this form within 14 days of retaining additional subcontractors and motor carriers on the project. This form must be submitted to the Project Manager or individual as identified in the solicitation document.

Additional Subcontractors

By signing this document, I certify that I am an owner or officer of the company, and I swear under oath that all additional subcontractors and motor carriers listed on this Additional Subcontractor List have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.

Signed this _____ day of _____, 20__

By: _____ [printed name]

_____ [title] of _____ [name of company]

STATE OF MINNESOTA)
) ss.
COUNTY OF _____)

Signed and sworn to before me on _____, 20____, by
_____.

Notary Public

(stamp)

BID BOND (PENAL SUM FORM)

Bidder Name: [Full formal name of Bidder] Address <i>(principal place of business)</i> : [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: El Nuevo Amanecer Cooperative Address <i>(principal place of business)</i> : 2610 University Ave W, Suite 150 St. Paul, MN 55114	Bid Project <i>(name and location)</i> : El Nuevo Trailer Park Water and Sewer Repair, Gaylord, MN Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder _____ <i>(Full formal name of Bidder)</i>	Surety _____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

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

SECTION 00520

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is by and between El Nuevo Amanecer Cooperative (“Owner”) and
_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Water service, sewer lining, pavement repair and incidental items

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

EL NUEVO TRAILER PARK WATER & SEWER REPAIR

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by KLJ Engineering LLC, which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

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

4.02 *Dates for Substantial Completion and Final Payment*

A. The Work will be substantially completed on or before October 15, 2025, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before November 15, 2025. Additionally, once Contractor mobilizes equipment to the project site, all work shall be completed within 75 days.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$1,200 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$700 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

- A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the actual quantity of that item. Unit prices are those listed in the Unit Price Schedule of the Bid Form attached as Exhibit A to the agreement.

The Bid prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the once each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and

in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
 - a. Ninety-five (95) percent of Work completed (with the balance being retainage).
 - b. Ninety-five (95) percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to (97.5) percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
 - E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor’s safety precautions and programs.
 - F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
 - G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
 - H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 - I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
1. This Agreement (pages 1 to 8, inclusive).
 2. Performance bond (pages _____ to _____, inclusive).
 3. Payment bond (pages _____ to _____, inclusive).
 4. Other bonds (pages _____ to _____, inclusive).
 - a. _____ (pages _____ to _____, inclusive).
 5. General Conditions (pages 1 to 62, inclusive).
 6. Supplementary Conditions (pages 1 to 10, inclusive).
 7. Specifications as listed in the table of contents of the Project Manual.
 8. Drawings consisting of 14 sheets with each sheet bearing the following general title:
El Nuevo Trailer Park Water & Sewer Repair.
 9. Addenda (numbers _____ to _____, inclusive).
 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor’s Bid (pages _____ to _____, inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages _____ to _____, inclusive).
 - c. [List other required attachments (if any), such as documents required by funding or lending agencies]
 11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages _____ to _____, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.

- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

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

10.03 *Successors and Assigns*

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

10.04 *Severability*

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

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

None.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

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

OWNER: El Nuevo Amanecer Cooperative

CONTRACTOR:

Signature

Signature

By: _____

By: _____

Title: _____

Title: _____

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

Attest: _____
Signature

Attest: _____
Signature

By: _____

By: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License No.: _____

(Where applicable)

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

Agent for service of process:

NOTICE TO PROCEED

Owner: El Nuevo Amanecer Cooperative Owner's Project No.: ENA2025
Engineer: KLJ Engineering LLC Engineer's Project No.: 2416-00827
Contractor: _____ Contractor's Project No.: _____
Project: El Nuevo Trailer Park Water & Sewer Repair
Contract Name: El Nuevo Trailer Park Water & Sewer Repair
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Select one of the following two alternatives, insert dates or number of days, and delete the other alternative.]**

The date by which Substantial Completion must be achieved is **October 15, 2025**, and the date by which readiness for final payment must be achieved is **November 15, 2025**. **Additionally, once Contractor mobilizes equipment to the project site, all work shall be completed within 75 days.**

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

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

Owner: El Nuevo Amanecer Cooperative
By (signature): _____
Name (printed): _____
Title: _____
Date Issued: _____

Copy: Engineer

PERFORMANCE BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: El Nuevo Amanecer Cooperative</p> <p>Mailing address <i>(principal place of business)</i>: 2610 University Ave W, Suite 150 St. Paul, MN 55114</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: El Nuevo Trailer Park Water and Sewer Repair, Gaylord, MN</p> <p>Contract Price: [Amount from Contract]</p> <p>Effective Date of Contract: [Date from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <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: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner 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: [Full formal name of Contractor]</p> <p>Address (<i>principal place of business</i>): [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address (<i>principal place of business</i>): [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: El Nuevo Amanecer Cooperative</p> <p>Mailing address (<i>principal place of business</i>): 2610 University Ave W, Suite 150 St. Paul, MN 55114</p>	<p>Contract</p> <p>Description (<i>name and location</i>): El Nuevo Trailer Park Water and Sewer Repair, Gaylord, MN</p> <p>Contract Price: [Amount, from Contract]</p> <p>Effective Date of Contract: [Date, from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

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

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

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
 - 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
 18. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

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.

SECTION 00700 STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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and

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Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

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

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

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

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

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

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

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

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

2.03 Commencement of Contract Times; Notice to Proceed

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefore.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

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

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

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

3.06 *Electronic Data*

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

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

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.

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

4.02 *Subsurface and Physical Conditions*

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

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

- 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

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

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefore as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract

Price or Contract Times, Owner or Contractor may make a Claim therefore as provided in Paragraph 10.05.

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefore as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefore as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverage so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

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

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

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

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall, in writing, advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

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

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

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

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

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

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

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

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

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

6.17 *Shop Drawings and Samples*

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

1. *Shop Drawings:*
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
 2. *Samples:*
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Submittal Procedures:*
1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 6. any inspection, test, or approval by others; or
 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefore, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefore as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

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

7.03 *Legal Relationships*

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

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

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

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

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

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

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

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of

any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

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

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefore as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the

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

10.03 *Execution of Change Orders*

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

10.04 *Notification to Surety*

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

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B.

Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

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

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

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers'

compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

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

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

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

12.01 *Change of Contract Price*

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

- a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
- b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

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

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefore as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's

entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 Notice of Defects

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

13.02 Access to Work

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

13.03 Tests and Inspections

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
 - D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
 - E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
 - F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefore as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the

parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the

defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefore as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude

Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefore as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

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

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

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

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefore.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefore. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefore. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

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

14.08 *Final Completion Delayed*

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

14.09 *Waiver of Claims*

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

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefore as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
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;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

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

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

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

17.03 *Cumulative Remedies*

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

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

SECTION 00800

SUPPLEMENTARY CONDITIONS To STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-2.02 Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following in its place:

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

SC-2.05 Before Starting Construction

Add Paragraph 2.05.B in its entirety:

- B. At the time of the Pre-Construction Conference, the Contractor shall submit the following for the Engineer's timely review:
 - a. List of all subcontractors and suppliers with contact information.

SC-2.07 Initial Acceptance of Schedules

Add the following language to Paragraph 2.07.A

Said conference, if deemed necessary by the Engineer, will be held at the place and on the date and time established by the Engineer.

SC-4.02 Subsurface and Physical Conditions

1. Report dated February 14, 2023, prepared by Braun Intertec, entitled: "Baseline Property Condition and Infrastructure Assessment", consisting of 211 pages. The "technical data" contained in such report upon which Contractor may rely are: *None*.

- B. The following drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) are known to Owner:
 - a. None of the contents of such drawings is "technical data" on which Contractor may rely.
- E. 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.
- F. Copies of reports and drawings identified in SC-4.02 that are not included with the Bidding Documents may be examined at KLJ Engineer - West Fargo, ND during regular business hours or an electronic copy may be requested from the Engineer.

SC-4.05 Reference Points

Add the following to Paragraph 4.05.A

Contractor shall be responsible for all costs in reestablishing any reference point lost or damaged. All such costs shall be paid within 30 calendar days of being presented a billing invoice. Any amount not paid shall be withheld for the Contractor's next partial payment and all subsequent payments, including the final payment, unless proof of payment is received by Owner.

SC-4.06 Hazardous Environmental Conditions

Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

SC-5.01 Performance, Payment and other Bonds

Add Paragraph 5.01.D

- D. For any connection to an existing watermain or sanitary sewer, the Contractor shall purchase and maintain a Bond in accordance with Minnesota Statute, Section 326.40.

SC-5.02 Licensed Sureties and Insurers

Add Paragraph 5.02.B and 5.02.C

- B. Without limiting any of the other obligations or liabilities of the Contractor, Contractor shall secure and maintain appropriate insurance that will protect the Contractor, the vicarious acts of subcontractors, the Owner and the Engineer and their agents and employees from claims for bodily injury, or property damage which may arise from operations under this Agreement. Insurance shall be purchased for an insurance company (or companies) authorized to write insurance in the project jurisdiction, with minimum "A.M. Best Rating" of A-, VI. Contractor shall not commence work under this Agreement until such insurance has been obtained and certificates of insurance, with binders, or certified copies of the insurance policy shall have been filed with the Owner and the Engineer.
- C. All insurance coverage shall remain in effect throughout the life of the Agreement, except that the Contractor shall maintain the Commercial General Liability Policy including product and completed operations coverage for a period of at least one year following the substantial completion date to cover any property damage resulting from the occurrences during the agreement period or which may occur or become visible/know within the one-year warranty period.

SC-5.04 Contractor's Liability Insurance

Add the following new paragraph immediately after Paragraph 5.04.B:

- C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
 - 1. Workers' Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 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 General Liability under Paragraphs 5.04.A.3 through A.6 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. General Aggregate \$2,000,000

- b. Products - Completed Operations Aggregate \$2,000,000
 - c. Personal and Advertising Injury \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
 - e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.
 - f. Excess or Umbrella Liability
 - General Aggregate \$2,000,000
 - Each Occurrence \$2,000,000
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
- a. Combined Single Limit of \$1,000,000
4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
- a. Bodily Injury:
 - Each person \$1,000,000
 - Each Accident \$1,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000
 - Annual Aggregate \$1,000,000
5. Contractor's General Liability and Commercial Automobile policies shall provide an additional insured endorsement in favor of the following parties:
- a. KLJ Engineering LLC and its Consultants
 - b. El Nuevo Amanecer Cooperative
 - c. Northcountry Cooperative Foundation
 - d. Connect Real Estate Group

SC-6.17 Shop Drawings and Samples

Add the following new paragraphs immediately after Paragraph 6.17.E:

- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-9.03 Project Representative

Add the following new paragraphs immediately after Paragraph 9.03.A:

- B. 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, and circulate copies of minutes thereof.
 - 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. *Shop Drawings and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
7. *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.
8. *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.
9. *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.

10. *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. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- 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.

11. *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.

12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. *Completion:*

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
- b. Participate in a final inspection 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.

C. 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 from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

SC-11.03 Unit Price Work

Delete Paragraph 11.03.D in its entirety and insert the following in its place:

- D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
 1. if the Bid price of a particular item of Unit Price Work amounts to 20 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and
3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC-14.07 Final Payment

Add 14.07.A.2.e

- e. Final Payment shall include the Minnesota Department of Revenue Form IC-134 and the Certificate for Final Payment

SC-16.01 Methods and Procedure

Delete Paragraph 16.01.C in its entirety and insert the following in its place:

- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 1. elects in writing to demand arbitration of the Claim, pursuant to Paragraph SC-16.02; or
 2. agrees with the other party to submit the Claim to another dispute resolution process.

Add the following new paragraph immediately after Paragraph 16.01.

SC-16.02 Arbitration

- A. All Claims or counterclaims, disputes, or other matters in question between Owner and Contractor arising out of or relating to the Contract Documents or the breach thereof (except for Claims which have been waived by the making or acceptance of final payment as provided by Paragraph 14.09) including but not limited to those not resolved under the provisions of Paragraphs SC-16.01A and 16.01.B will be decided by arbitration in accordance with the rules of American Arbitration Association, subject to the conditions and limitations of this Paragraph

SC-16.02. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the 30 day period specified in Paragraph SC-16.01.C, and in all other cases within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or other dispute or matter in question would be barred by the applicable statute of limitations.
- C. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include: (i) a concise breakdown of the award; (ii) a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Controlling Law relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

NOTICE OF AWARD

Date of Issuance:

Owner: El Nuevo Amanecer Cooperative Owner’s Project No.: ENA2025
Engineer: KLJ Engineer LLC Engineer’s Project No.: 2416-00827
Project: El Nuevo Trailer Park Water & Sewer Repair
Contract Name: El Nuevo Trailer Park Water & Sewer Repair
Bidder:
Bidder’s Address:

You are notified that Owner has accepted your Bid dated **February 6, 2025** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is \$**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

Three (3) unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder’s compliance]**

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

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **El Nuevo Amanecer Cooperative**
By *(signature)*: _____
Name *(printed)*: _____
Title: _____
Copy: Engineer

Contractor's Application for Payment

Owner: <u>El Nuevo Amanecer Cooperative</u>	Owner's Project No.: <u>ENA2025</u>
Engineer: <u>KLJ Engineering LLC</u>	Engineer's Project No.: <u>2416-00827</u>
Contractor: _____	Contractor's Project No.: _____
Project: <u>El Nuevo Trailer Park Water & Sewer Repair</u>	
Contract: _____	
Application No.: _____	Application Date: _____
Application Period: From _____ to _____	

1. Original Contract Price	#REF!
2. Net change by Change Orders	#REF!
3. Current Contract Price (Line 1 + Line 2)	#REF!
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	#REF!
5. Retainage	
a. _____ X <u>#REF!</u> Work Completed	#REF!
b. _____ X <u>#REF!</u> Stored Materials	#REF!
c. Total Retainage (Line 5.a + Line 5.b)	#REF!
6. Amount eligible to date (Line 4 - Line 5.c)	#REF!
7. Less previous payments (Line 6 from prior application)	
8. Amount due this application	#REF!
9. Balance to finish, including retainage (Line 3 - Line 4)	#REF!

Contractor's Certification

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

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

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

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

Contractor: _____

Signature: _____ **Date:** _____

Recommended by Engineer	Approved by Owner
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____
Approved by Funding Agency	
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: El Nuevo Amanecer Cooperative
Engineer: KJ Engineering LLC
Contractor: El Nuevo Trailer Park Water & Sewer Repair
Contract: _____
Owner's Project No.: ENA2025
Engineer's Project No.: 2416-00827
Contractor's Project No.: _____

Application No.:		Application Period:		From		to		Application Date:					
A	B	C	D	E		F	G	H	I	J	K	L	
				Contract Information									Contract Information
Bid Item No.	Description	Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E)	Value of Work Completed to Date (E X G)	Estimated Quantity Incorporated in the Work	Value of Work Completed (E X G)	Materials Currently Stored (not in G)	Work Completed and Materials Stored to Date (H + I)	% of Value of Item (J / F)	Balance to Finish (F - J)	
													Original Contract
Original Contract													
Base Bid													
1	Mobilization	1	LS		-	-		-		-		-	
2	Erosion Control	1	LS		-	-		-		-		-	
3	Abandon 2" Watermain	1	LS		-	-		-		-		-	
4	Remove Pavement	845	SY		-	-		-		-		-	
5	Remove Trees	1	EA		-	-		-		-		-	
6	Connect to Ex. Water	1	EA		-	-		-		-		-	
7	Water Meter Manhole	1	EA		-	-		-		-		-	
8	Watermain Fittings	8	EA		-	-		-		-		-	
9	3" Gate Valve	8	EA		-	-		-		-		-	
10	3" PVC Water Main	454	LF		-	-		-		-		-	
11	Bore Pipe 3" Dia. PVC	878	LF		-	-		-		-		-	
12	Water Services	31	EA		-	-		-		-		-	
13	Spot Repair	5	EA		-	-		-		-		-	
14	Deep Clean Sanitary Sewer Piping	1440	LF		-	-		-		-		-	
15	Line Sanitary Sewer Piping	1440	LF		-	-		-		-		-	
16	Line Sanitary Sewer Manhole	5	EA		-	-		-		-		-	
17	Repair Service Protulsion	1	EA		-	-		-		-		-	
18	48" Sanitary Manhole	1	EA		-	-		-		-		-	
19	Reopen Services	31	EA		-	-		-		-		-	
20	Temporary Sewage Bypass	1	LS		-	-		-		-		-	
21	Asphalt Pavement	845	SY		-	-		-		-		-	
22	Site Restoration	6	EA		-	-		-		-		-	
Alternate 1													
1	1.5" Mill & Overlay	3162	SY		-	-		-		-		-	
2	Asphalt Patch	842	SY		-	-		-		-		-	
Alternate 2													
1	Remove Pavement	3162	SY		-	-		-		-		-	
2	Asphalt Pavement	703	TON		-	-		-		-		-	
3	6" Aggregate Base	527	CY		-	-		-		-		-	
Original Contract Totals											\$	-	\$

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: El Nuevo Amanecer Cooperative
 Engineer: KLJ Engineering LLC
 Contractor: El Nuevo Trailer Park Water & Sewer Repair
 Contract:

Owner's Project No.: ENA2025
 Engineer's Project No.: 2416-00827
 Contractor's Project No.:

Application No.:		From		to		Application Date:					
A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.	Description	Contract Information		Unit Price (\$)	Value of Bid Item (C X E) (\$)	Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)
		Item Quantity	Units			Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)				
Change Orders											
					-		-		-		-
				Change Order Totals	\$		\$		\$		\$
Original Contract and Change Orders											
				Project Totals	\$		\$		\$		\$

Stored Materials Summary **Contractor's Application for Payment**

Owner:	El Nuevo Amanecer Cooperative	Owner's Project No.:	ENAX2025
Engineer:	KUJ Engineering LLC	Engineer's Project No.:	2416-00827
Contractor:		Contractor's Project No.:	
Project:	El Nuevo Trailer Park Water & Sewer Repair		
Contract:			

A Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	B Supplier Invoice No.	C Submittal No. (with Specification Section No.)	D Description of Materials or Equipment Stored	Application Period: From		to		Application Date:			M Materials Remaining in Storage (I-L) (\$)	
				E Storage Location	F Application No. When Materials Placed in Storage	G Previous Amount Stored (\$)	H Materials Stored Amount Stored this Period (\$)	I Amount Stored to Date (G+H) (\$)	J Amount Previously Incorporated in the Work (\$)	K Incorporated in Work Amount Incorporated in the Work this Period (\$)		L Total Amount Incorporated in the Work (J+K) (\$)
Totals									\$	\$	\$	\$

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: El Nuevo Amanecer Cooperative Owner's Project No.: ENA2025
Engineer: KLJ Engineering LLC Engineer's Project No.: 2416-00827
Contractor: Contractor's Project No.:
Project: El Nuevo Trailer Park Water & Sewer Repair
Contract Name: El Nuevo Trailer Park Water & Sewer Repair

This Preliminary Final Certificate of Substantial Completion applies to:

All Work The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

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

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

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

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

Amendments to Owner's Responsibilities: None As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: None As follows:

[List amendments to Contractor's Responsibilities]

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

[List attachments such as punch list; other documents]

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

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

FINAL REVIEW AND ACCEPTANCE

CONTRACTOR: [REDACTED]

CONTRACTOR ADDRESS: [REDACTED]

PROJECT NAME: El Nuevo Trailer Park Water & Sewer Repair

OWNER: El Nuevo Amanecer Cooperative

OWNER ADDRESS: 2610 University Ave W, Suite 150, St. Paul, MN 55114

On this Date, [REDACTED], a final review of the project as constructed was made.

The Contractor hereby certifies that the construction is completed in accordance with the plans and specifications, approved Change Orders, and terms of the contract. The Contractor further certifies that there are no unpaid bills or labor disputes in connection with this contract and that the amount of \$ [REDACTED] shown on the final estimate is the total remaining amount due for all work completed for the project.

The making and acceptance of final payment will constitute a waiver of all Claims by Owner against Contractor, except Claims arising from defective Work appearing after final inspection, from failure to comply with the Contract Documents or the terms of any special guarantees or warranties specified therein, or from Contractor's continuing obligations under the Contract Documents. The making and acceptance of final payment will constitute a waiver of all future Claims by Contractor against Owner other than those previously made and expressly acknowledged by Owner in writing as still unsettled.

The undersigned Owner does hereby agree that all construction and engineering work on the project is complete and does satisfy all terms of appropriate construction or engineering agreements.

Owner and Contractor do hereby acknowledge that the one year warranty period will begin on [REDACTED].

(Owner Signature)

By: _____
(Typed or Printed Name)

Date: _____

(Contractor Signature)

By: _____
(Typed or Printed Name)

Date: _____

Witnessed By: KLJ Engineering LLC.

(Engineer Signature)

By: _____
(Typed or Printed Name)

Contractor Affidavit

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

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

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

Project number	Project location			
Project owner	Address	City	State	ZIP code

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

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

Sole contractor

Subcontractor

Name of contractor who hired you

Address

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

Business name	Address	Owner/Officer

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

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

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

Certificate of Compliance

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

Department of Revenue approval

Date

Form IC134 Instructions

Contractor Affidavit

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

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

Use of Information

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

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

Minnesota Tax ID Number

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

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

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

Submit Contractor Affidavit

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

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

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

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

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

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

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

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

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

Information and Assistance

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

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

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

This information is available in alternate formats.

CHANGE ORDER NO.: [Number of Change Order]

Owner: El Nuevo Amanecer Cooperative Owner's Project No.: ENA2025
 Engineer: KLJ Engineering LLC Engineer's Project No.: 2416-00827
 Contractor: Contractor's Project No.:
 Project: El Nuevo Trailer Park Water & Sewer Repair
 Contract Name:
 Date Issued: Effective Date of Change Order:

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

Description:

[Description of the change]

Attachments:

[List documents related to the change]

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

Recommended by Engineer (if required)

Authorized by Owner

By: _____

Title: _____

Date: _____

Accepted by Contractor

Approved by Funding Agency (if applicable)

By: _____

Title: _____

Date: _____

FIELD ORDER NO.: [Number of Field Order]

Owner: El Nuevo Amanecer Cooperative Owner's Project No.: ENA2025
Engineer: KLJ Engineering LLC Engineer's Project No.: 2416-00827
Contractor: Contractor's Project No.:
Project: El Nuevo Trailer Park Water & Sewer Repair
Contract Name:
Date Issued: Effective Date of Field Order:

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

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Submittals for review, information, and project closeout.
- E. Partial progress payments.
- F. Requests for Interpretation (RFI) procedures.
- G. Submittal procedures.

1.2 PROJECT COORDINATION

- A. Project Coordinator: _____.
- B. Construction Coordinator: General Contractor
- C. Owner's Representative: Architect, Civil Engineer, Structural Engineer, Electrical Engineer, Mechanical Engineer, Geo-technical Engineer, or Landscape Architect, etc. (as appropriate to the scope of work).
- D. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for construction access, traffic, and parking facilities.
- E. During construction, coordinate use of site and facilities through the Project Coordinator.
- F. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- G. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- H. Coordinate construction staking and layout of work under instructions of the Project Coordinator, Owner, or Owner's Representative(s).
- I. Make the following types of submittals to the Project Coordinator. The Project Coordinator is responsible for distribution of submittals to the Owner and the Owner's Representative(s).
 - 1. Requests for Information (RFIs).
 - 2. Requests for substitution (Approved Equal).
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.
 - a. Operation Manuals.
 - b. Manufacturer's Warranty Documents.
 - c. Record Drawings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. Project Coordinator will schedule a meeting after Notice of Award; if deemed necessary.
- B. Attendance Required:
 - 1. Owner.
 - 2. Owner's Representative(s)
 - 3. Contractor.
 - a. Job Superintendent.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties to Contract.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, funding sources, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Coordination.
 - a. Stored Materials
 - b. Utility Services
 - c. Site Visit
 - d. Laydown Area
 - 9. Scheduling activities of Testing Agency.
- D. Project Coordinator to record minutes and distribute electronic copies within two days after meeting to participants, with electronic copy to Project Coordinator, Owner, Owner's Representative(s), contractor, participants, and those affected by decisions made.

3.2 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at regular intervals, as deemed necessary by the Owner and/or Owner's Representative.
- B. Contractor will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Owner's Representative(s) - as necessary
 - 4. Contractor's superintendent.
 - 5. Major subcontractors.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will 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.
- E. Contractor shall record minutes and distribute copies within two days after meeting to participants, with electronic copy to Project Coordinator, Owner, Owner's Representatives, participants, and those affected by decisions made (Engineer, Utility Company, City, etc.).

3.3 CONSTRUCTION PROGRESS SCHEDULE

- A. 10 days prior to Pre-Construction Meeting, submit schedule defining planned operations for the first 30 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule every 30 days or monthly.

3.4 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Product samples.
 3. Shop drawings.
- B. After Contractor has reviewed and approved, submit to Project Coordinator for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7000 - Execution and Closeout Requirements and Section 01 7800 - Closeout Submittals.

3.5 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
1. Design data.
 2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 7. Other types indicated.

3.6 PARTIAL PROGRESS PAYMENTS

- A. In accordance with 00 0700 - Standard General Conditions of the Construction Contract and 00 0800 - Supplementary Conditions to Standard General Conditions of the Construction Contract, otherwise as agreed upon prior to construction.

3.7 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.

- C. When the following are specified in individual sections, submit them at project closeout in conformance to requirements of Section 01 7000 - Execution and Closeout Requirements:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.

3.8 SUBMITTAL PROCEDURES

- A. General Requirements:
- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 - 2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- C. Transmit each submittal with a copy of approved submittal form to the Project Coordinator.
 - 1. Product data and shop drawings: transmit electronically in PDF format via email.
 - 2. Product samples: transmit the number of samples that Contractor requires, plus one that will be retained by Project Coordinator or Owner's Representative.
- D. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- F. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- G. Schedule submittals to expedite the Project, and coordinate submission of related items.
- H. For each submittal for review, allow 21 days excluding delivery time to and from the Contractor.
- I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- J. Provide space for Contractor and Owner's Representative(s) review.
- K. When revised for resubmission, identify all changes made since previous submission.
- L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.**

END OF SECTION

**SECTION 01 4000
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Inspection agencies and services.
- E. Control of installation.
- F. Tolerances.
- G. Defect Assessment.

1.2 RELATED REQUIREMENTS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements.
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements.

1.3 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Test Reports: After each test/inspection, promptly submit one electronic copy of report to Project Coordinator, Contractor, Owner, and Owner's Representative.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name, address and telephone number of testing agency.
 - d. Name of inspector.
 - e. Date and time of sampling or inspection.
 - f. Identification of product and specifications section.
 - g. Location in the Project.
 - h. Type of test/inspection.
 - i. Date of test/inspection.
 - j. Results of test/inspection.
 - k. Compliance with Contract Documents.

- I. When requested by Project Coordinator or Owner's Representative(s), provide interpretation of results.
2. Test report submittals are for Project Coordinator's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Project Coordinator, then to Owner & Owner's Representative, in quantities specified for Product Data.
 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Owner's Representative.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

1.6 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
 2. Laboratory: Authorized to operate in the State in which the Project is located.
 3. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Project Coordinator, then Owner's Representative before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Project Coordinator, then Owner's Representative before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.3 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Project Coordinator and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Project Coordinator and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Project Coordinator or Owner's Representative.
 - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work .
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Project Coordinator and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6. Make arrangements with the independent testing laboratory employed by the Owner to obtain and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Project Coordinator or Owner's Representative.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.4 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Project Coordinator, it is not practical to remove and replace the Work, Owner will direct an appropriate remedy or adjust payment.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.
END OF SECTION**

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Guidelines, directions, and descriptions for temporary utilities, including electricity, lighting, heat, ventilation, telephone service, water and sanitary facilities.
- B. Temporary controls for barriers and protection of the work during construction.
- C. Construction Facilities: Progress cleaning.
- D. Waste removal facilities and services.

1.2 RELATED REQUIREMENTS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements

1.3 REFERENCES

- A. OSHA Publications:
 - 1. No. 3007 Ground Fault Protection on Construction Sites
 - 2. No. 3106 Concrete and Masonry
 - 3. No. 3115 Underground Construction
 - 4. No. 3124 Stairs and Ladders
 - 5. No. 2226 Excavation and Trenching Operations
- B. International Fire Code (IFC), latest edition.
 - 1. Chapter 14 for construction with flammable materials present.

1.4 TEMPORARY FACILITIES

- A. Electricity: If available and adequate, Owner's existing power service may be utilized during construction. Do not disrupt Owner's need for continual service.
 - 1. Owner's permanent convenience receptacles may be utilized during construction.
 - 2. Owner's permanent building lighting may be utilized during construction.
- B. Provide temporary heat for construction and protection of facilities.
- C. Ventilation: Ventilate enclosed areas to assist cure of materials, dissipate humidity and prevent accumulation of dust, fumes, vapors or gases.
 - 1. Extend and supplement existing equipment with temporary fan units as required to maintain clean air for construction operations.
 - 2. Provide additional fans as needed.
 - 3. During winter heating season use conservation measures to reduce heat loss.
- D. Telephone Service: Provide and maintain telephone service, if required.
- E. Water Service: Existing water system (if available) may be utilized during construction. Utilize measures to conserve water. If not available, provide temporary supply for potable use, sanitation and construction.
- F. Sanitary Facilities: Contractor shall provide temporary sanitary facility for workers unless Owner authorizes Contractor to use existing restroom facilities.
- G. Safety Barriers: Provide safety barriers to prevent unauthorized entry into construction areas and allow for Owner's use of site if required.

1.5 FIELD OFFICE AND STORAGE AREA

- A. If unused space is available on site, Contractor may use it for office and storage space. Space must be coordinated with and approved by Owner.
- B. Areas designated for storage must be secured by Contractor. Sensitive or hazardous materials shall not be brought on site without the written consent of Owner.

1.6 SITE DRAINAGE

- A. Grade site to drain around temporary facilities.
- B. Provide erosion control and protection as needed.
- C. Sensitive and hazardous materials must be stored away from drainage areas and water ways.

1.7 SNOW REMOVAL

- A. Clear snow from parking areas, storm and roof drain outlets, and the Work zone.
- B. Protect installed improvements.
- C. Do not pile snow over storm and roof drain outlets.
- D. Contractor is responsible for snow removal within the Work zone through the duration of the project or until Owner agrees to assume responsibility for snow removal.

1.8 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for Owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.9 SECURITY

- A. Provide security, as needed, to protect finished work, existing facilities, adjacent property and Owner's operations from unauthorized entry, vandalism, or theft.

1.10 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 5500

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.11 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities and materials prior to final application for payment.

- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.
- D. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

PART 4 MEASUREMENT AND PAYMENT

4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.

4.2 GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY FACILITIES AND CONTROLS REQUIRED IN THIS SECTION.

END OF SECTION

**SECTION 01 5713
EROSION AND SEDIMENT CONTROL**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Permanent erosion control.
- E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.2 RELATED REQUIREMENTS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements.
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements.
 - 1. Architect, Landscape Architect, Civil Engineer, Structural Engineer, Electrical Engineer, Mechanical Engineer, Geotechnical Engineer, etc., as applicable for the scope of work.
- C. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
- D. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.
- E. Section 32 9219 - Seeding: Permanent turf for erosion control and soil stabilization.

1.3 REFERENCE STANDARDS

- A. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 2013.
- B. ASTM D1388 - Standard Test Method for Stiffness of Fabrics; 2014.
- C. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.
- D. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).
- E. ASTM D4595 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method; 2011.
- F. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).
- G. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).
- H. ASTM D6460 - Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion; 2012.
- I. ASTM D6524 - Standard Test Method for Measuring the Resiliency of Turf Reinforcement Mats (TRMs); 2000 (Reapproved 2011).
- J. ASTM D6525/D6525M - Standard Test Method for Measuring Nominal Thickness of Rolled Erosion Control Products; 2014.

- K. ASTM D6566 - Standard Test Method for Measuring Mass per Unit Area of Turf Reinforcement Mats; 2014.
- L. ASTM D6567 - Standard Test Method for Measuring the Light Penetration of a Turf Reinforcement Mat (TRM); 2014.
- M. ASTM D6575 - Standard Test Method for Determining Stiffness of Geosynthetics Used as Turf Reinforcement Mats (TRMs); 2014a.
- N. ASTM D6818 - Standard Test Method for Ultimate Tensile Properties of Rolled Erosion Control Products; 2014.
- O. ASTM D7322 - Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions; 2013.
- P. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.
- Q. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.

1.4 PERFORMANCE REQUIREMENTS

- A. Develop and follow a Storm Water Pollution Prevention Plan (SWPPP) and submit periodic inspection reports.
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits:
 - a. Construction General Permit from the North Dakota Department of Environmental Quality.
 - b. Local permits as required by jurisdiction.
 - 2. Contractor shall be responsible for payment of any fines resulting from non-compliance with the applicable regulations and/or permit(s). If Owner pays for assessed fines due to Contractor failure or refusal to pay for assessed fines, Owner will withhold payment to Contractor an amount equivalent to the fines paid by Owner.
- C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- D. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff of sediment-laden water into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
- E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.

4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- I. Open Water: Prevent standing water that could become stagnant.
- J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Storm Water Pollution Prevention Plan (SWPPP):
 1. Submit not less than 30 days prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
 2. Obtain the approval of the Plan by authorities having jurisdiction.
 3. Obtain the approval of the Plan by Owner.
- C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- B. Fiber Rolls (Straw Wattles):
 1. 9 inch, Flaxtech straw wattles, North American Green WS9, AEC Premier Straw Wattles, or approved equal.
 2. 9 inch has a minimum weight of 2.4 lbs/ft.
- C. Inlet Protection: Polypropylene inlet filter bag with a minimum flow rate of 145 gallons per minute per square foot, and designed for a minimum silt and debris capacity of 2 cubic feet.
 1. Flexstorm Inlet Filter manufactured by Inlet & Pipe Protection, Inc. or approved equivalent.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.2 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.3 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed, temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 - 1. Width: As required; 20 feet, minimum.
 - 2. Length: 50 feet, minimum.
 - 3. Provide at each construction entrance from public right-of-way.
 - 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of fiber rolls.
 - 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - b. Along the toe of cut slopes and fill slopes.
 - 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet.
 - b. Slope Between 2 and 5 Percent: 75 feet.
 - c. Slope Between 5 and 10 Percent: 50 feet.
 - d. Slope Between 10 and 20 Percent: 25 feet.
 - e. Slope Over 20 Percent: 15 feet.
- D. Inlet Protection: Installed in locations delineated on the plans.
- E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- F. Soil Stockpiles: Protect using perimeter silt fence.
- G. Temporary Seeding: Use in areas not being developed or planned to be developed for a period greater than 14 days.

3.4 INSTALLATION

- A. Fiber Rolls:
 - 1. Install in fiber roll sections with roll ends overlapping 1 foot or greater when installed perpendicular to a slope.
 - 2. When placed parallel to a slope, turn downhill end of fiber roll uphill to create a "J" or hook shape. The short end of the "J" shall be 4' long (minimum). The uphill end of the fiber roll shall abut the subsequent uphill fiber roll section.
 - 3. Install so that bindings are not in contact with the ground.
 - 4. Embed at least 3 inches in the ground.
 - 5. Install anchor at least every 4 feet.
 - 6. Place soil excavated for trench against bales on the upslope side of the row, compacted.
- B. Inlet Protection:
 - 1. Install where indicated in plans or as needed, in accordance with manufacturer's recommendations.
- C. Temporary Seeding:
 - 1. When hydraulic seeder is used, seedbed preparation is not required.
 - 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge

- and germinate.
- 3. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
- 4. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
- 5. Repeat irrigation as required until grass is established.

3.5 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.25 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Fiber Rolls:
 - 1. Promptly replace rolls that fall apart or otherwise deteriorate unless need has passed.
 - 2. Remove silt deposits that exceed one-half of the height of the rolls.
 - 3. Repair rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Clean out temporary sediment control structures weekly and relocate soil on site.
- E. Place sediment in appropriate locations on site; do not remove from site.
- F. When Project Coordinator, Owner, or Owner's Representative notifies the Contractor that the erosion control measures (BMP's) are not in compliance with the SWPPP, the Contractor shall have 4 hours to address the situation. Project Coordinator or Owner may apply a contract price reduction of \$1,000 per day until the issue is resolved.
- G. Contractor is responsible for payment of any fines, fees, or other financial penalties imposed by any governmental agency for Contractor's failure to comply with the terms of the SWPPP.

3.6 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Owner.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.
- D. Comply with all SWPPP requirements relative to protection removal.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 01 6000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED SECTIONS

- A. Instructions to Bidders: Product options and substitution procedures.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures.
- C. Section 01 4000 - Quality Requirements: Product quality monitoring.
- D. Project Coordinator: Described in Section 01 3000 - Administrative Requirements.
- E. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal requirements and procedures.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.2 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.

- B. Provide interchangeable components by the same manufacture for components being replaced.

2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION LIMITATIONS

- A. If provided, Section 00 0200 - Instructions to Bidders specifies time restrictions for submitting requests for Substitutions during the bidding period and the documents required. Any products approved during the bidding period will be identified by Addendum in writing.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Project Coordinator will notify Contractor, or issue an addendum of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.

- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

3.3 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive and hazardous products in weather tight, climate controlled enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

PART 4 MEASUREMENT AND PAYMENT

**4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.
END OF SECTION**

**SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures, final cleaning, adjusting, project record documents, and warranties.

1.2 DEFINITIONS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements

1.3 REFERENCES

- A. Contract Documents

1.4 PERFORMANCE REQUIREMENTS

- A. Construction must be performed in accordance with the applicable sections herein and all conditions of permits received prior to final acceptance and payment.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.6 QUALITY ASSURANCE

- A. All equipment must be properly labeled as directed by the Manufacturer or in the technical specifications.
- B. All components must be properly labeled and all operations and maintenance manuals must be present on site prior to startup.
- C. When specified in individual technical sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to startup, and to supervise placing equipment or system in operation.
- D. Perform testing, adjusting, and balancing.

PART 2 NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions that may cause damage.
- B. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- C. Verify wiring and support components for equipment are complete and tested.
- D. Execute start up under direct supervision of Contractor and in full accordance with manufacturer's instructions.
- E. Verify that all work is in compliance with the approved plans and specifications and all terms of the permit(s).

- F. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- G. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- H. Examine and verify specific conditions described in individual specification sections.
- I. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- J. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- K. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 SCHEDULING AND COORDINATION

- A. Coordinate schedule for startup of various equipment and systems.
- B. Coordinate with Owner on how project is taken over and operated during transition.
- C. Notify Owner's Representative two days prior to startup of each item.
- D. Coordinate schedule for site walkthrough with Project Coordinator.

3.3 FIELD QUALITY CONTROL

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of final inspection.
- B. Demonstrate equipment and instruct in a classroom environment on site by qualified representatives who are knowledgeable about the equipment and its performance.
- C. Demonstrate start up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- D. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.4 TOLERANCES

- A. Verify that all specified tolerances are being met.

3.5 LAYING OUT THE WORK

- A. Coordinate with Owner's Representative for staking of the work.
- B. Verify locations of survey control points prior to starting work.
- C. Promptly notify Project Coordinator of any discrepancies discovered.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Project Coordinator the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner's Representative.
- G. Utilize recognized engineering survey practices.

3.6 PROTECTION OF INSTALLED WORK

- A. Protect all finished work until Owner accepts responsibility.

3.7 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.8 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean debris from area drains and drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.9 PROJECT RECORD DOCUMENTS

- A. Refer to Section 01 7800 - Closeout Submittals.

3.10 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Project Coordinator and Owner.
- B. Notify Project Coordinator when work is considered ready for Project Coordinator's preliminary inspection and schedule preliminary inspection.
- C. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Project Coordinator's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Project Coordinator's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Project Coordinator's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Project Coordinator.
- F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Project Coordinator's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Project Coordinator.
- G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- H. Accompany Project Coordinator on Contractor's preliminary final inspection.
- I. Notify Project Coordinator when work is considered finally complete and ready for Project Coordinator's Substantial Completion final inspection.
- J. Notify Project Coordinator when work is considered finally complete and ready for Project Coordinator's and Owner's Substantial Completion final inspection.
- K. Complete items of work determined by Project Coordinator listed in executed Certificate of Substantial Completion.
- L. Complete items of work determined by Project Coordinator listed in executed Certificate of Substantial Completion.
- M. Submit As-Built drawings, Operation and Maintenance Manuals, and Warranty Certificates to Project Coordinator.

3.11 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual technical specification sections.
- B. Deliver to location as directed by Owner's Representative.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.
END OF SECTION**

**SECTION 01 7113
MOBILIZATION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contractor shall be responsible for all preparatory work and operations required prior to beginning work on the project and demobilization.
 - 1. Mobilization
 - 2. Demobilization
 - 3. Assembly and disassembly of equipment and plants
 - 4. Project incidentals
- B. Mobilization shall apply specifically to Civil work related to Divisions 02 and 31-33.

1.2 DEFINITIONS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements

1.3 GENERAL

- A. Mobilization shall include, but not limited to, the following:
 - 1. Movement of personnel, tools, equipment, materials, supplies, and incidentals to the project site and all preparatory work.
 - 2. Establishment of all necessary facilities, including acquisition of easements for the Contractor's convenience.
 - 3. Obtaining permits necessary for the execution of the work.
 - 4. Upon completion of the work, the Contractor shall remove tools, equipment, and unused materials, supplies, debris, and waste from the project site and restore all disturbed areas outside the project area to their pre-construction condition.
- B. Refer to Section 02 4110 for disposal of waste materials.

1.4 SUBMITTALS

- A. Refer to Section 01 3000 - Administrative Requirements, for submittal procedures and requirements.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, Owner's Representative will make measurement in accordance with each specific bid item. For lump sum (LS) bid items, measurements will not be made.

4.2 PAYMENT

- A. Payment shall be made in accordance with the percentage of work completed to date of the partial payment estimate. Payment will not be made until 10-percent of the construction has been completed. The final 10-percent of the amount bid for mobilization will be withheld until all the final clean-up is complete.

END OF SECTION

**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Project Coordinator with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Project Coordinator will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Project Coordinator comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.

3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
 - C. Store record documents separate from documents used for construction.
 - D. Record information concurrent with construction progress.
 - E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
 - F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 4. Field changes of dimension and detail.
 5. Details not on original Contract drawings.
 6. If As-built or Record drawings are prepared using Engineer's certified plan sheets, Engineer's stamp and signature shall be masked or covered prior to submitting to Project Coordinator.

3.2 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.

- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Include test and balancing reports.
- N. Additional Requirements: As specified in individual product specification sections.

3.4 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Project Coordinator, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.

2. Table of Contents, of all volumes, and of this volume.
3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Photocopies of warranties and bonds.
- K. Submit one PDF copy of preliminary Operation and Maintenance Manuals to Project Coordinator for review.
- L. Project Coordinator will provide Contractor with any comments or request additional information to be included in the final Operation and Maintenance Manual.
- M. Provide one PDF copy and one bond hard copy of final Operation and Maintenance Manual to Project Coordinator.

3.5 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include photocopies of each in operation and maintenance manuals, indexed separately on Table of Contents.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 **ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.**
END OF SECTION

SECTION 02 4110 REMOVALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal and disposal of concrete, asphalt and other pavement items.
- B. Removal of sanitary sewer manholes and pipe.
- C. Removal of watermain pipe.

1.2 DEFINITIONS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fill Material: As specified in Section 31 2323 - Fill.

PART 3 EXECUTION

3.1 SCOPE

- A. Remove paving as required to accomplish new work.
- B. Remove manholes and manhole covers.
- C. Remove other items indicated, for salvage, relocation, and recycling.
- D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2323 - Fill.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Use of explosives is not permitted.
 - 3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 6. Do not close or obstruct roadways or sidewalks without permit.
 - 7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- D. Partial Removal of Paving: Neatly saw cut at right angle to surface.

3.3 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- E. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- F. Remove piping and manholes designated for removal.

3.4 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.
- D. Dispose of materials at locations approved by state and local regulations.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 1000
SITE CLEARING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of surface debris.
- C. Removal of root systems.

1.2 DEFINITIONS

- A. Project Coordinator: Described in Section 01 3000 - Administrative Requirements
- B. Owner's Representatives: Described in Section 01 3000 - Administrative Requirements

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 SITE CLEARING

- A. Comply with other requirements specified in Section 02 4110 - Removals.
- B. Lay out the work as shown on plans.
- C. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.2 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.3 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.
- B. Do not begin clearing until vegetation to be relocated has been removed.
- C. Do not remove or damage vegetation beyond the limits indicated on drawings.
- D. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
 - 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
 - 3. Around other vegetation to remain within vegetation removal limits.
- E. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 - 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
 - 3. Existing Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.

- 4. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
- 5. Fill holes left by removal of stumps and roots, using suitable fill material, with top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.
- F. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
- G. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.4 WARRANTY

- A. Existing plant life to remain within 10 feet of the area being cleared shall be replaced by the Contractor if death or damage resulting from contact during construction occurs within 1-year after final acceptance by Owner. Warranty shall include all costs for materials and installation.

3.5 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 2200
GRADING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal and storage of topsoil.
- B. Rough Grading procedures.
- C. Preparation and placement of topsoil for finish landscaping.

1.2 RELATED REQUIREMENTS

- A. Section 01 5713 - Temporary Erosion and Sediment Control: Soil stockpile protection.
- B. Section 31 1000 - Site Clearing.
- C. Section 31 2316 - Excavation.
- D. Section 31 2316 - Excavation: Rock Removal
- E. Section 31 2316.13 - Trenching: Trenching and backfilling for utilities.
- F. Section 31 2323 - Fill: Filling and compaction.
- G. Section 32 9219 - Seeding: Finish ground cover.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: Composed of loose, friable, loamy topsoil that is free of excess acid and alkali. Assure topsoil does not contain objectionable amounts of sod, tall grass, noxious weeds, roots, hard lumps, gravel, stones larger than described below, subsoil or other undesirable material which will prevent the formation of a suitable seeding, sodding or planting bed. Topsoil shall, prior to being stripped, have demonstrated ability to grow plants by the occurrence upon it of healthy crops, grass or other plant growth that is of good quality and that it is reasonably drained.
 - 1. Topsoil may be excavated on-site and designated for re-use or imported.
 - 2. Stones larger than 1 inch shall be removed from all areas to be finish graded.
 - 3. Acidity range (pH) of 5.5 to 7.5.
 - 4. Containing a minimum of 4 percent and a maximum of 20 percent inorganic matter.
- B. Other Fill Materials: See Section 31 2323 - Fill.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.
- C. Prior to placing topsoil:
 - 1. Verify backfilling compaction is complete.
 - 2. Verify substrate base has been contoured and compacted.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.

- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- H. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.
- I. Remove all existing asphalt, concrete, and other demolition items from the construction area and properly dispose at an approved disposal area. Aggregate surfacing removed shall be stockpiled for later reuse.

3.3 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Perform rough grading to obtain elevations shown on plans or as directed by the Owner's Representative.
- E. Areas shall be graded to provide positive drainage.
- F. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.
- G. When excavating through roots, perform work by hand and cut roots with sharp axe.
- H. See Section 31 2323 for filling procedures.
- I. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- J. The subgrade shall be maintained until permanent improvements are installed. Any damage due to inclement weather, contractor operations, or any other contractor/utility operations shall be repaired by the contractor at no expense to the contract.

3.4 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site.

3.5 FINISH GRADING - SUBSTRATE PREPARATION AND TOPSOIL PLACEMENT

- A. Before Finish Grading:
 1. Verify building and trench backfilling have been compacted and tested.
 2. Verify subgrade has been contoured and compacted and tested.
- B. Remove debris, roots, and branches. Remove stones as specified in Part 2 of this Section. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

- E. Place topsoil in areas indicated to depth indicated on plans. Minimum topsoil replacement depth is 6 inches in grass areas and 18 inches in planting bed areas.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil to approximately 80% maximum dry density.
- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.6 TOLERANCES

- A. Refer to Section 31 2323 - Fill.

3.7 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Owner's Representative as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.8 FIELD QUALITY CONTROL

- A. See Section 31 2323 for compaction density testing.

3.9 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive permanent improvements.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 2316.13
TRENCHING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Trenching for utilities to utility main connections.
- B. Trenching for utility mains and service lines.
- C. Backfill of utility trenches.

1.2 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Rough grading procedures.
- B. Section 31 2200 - Grading: Topsoil removal and replacement.
- C. Section 31 2316 - Excavation: Building and foundation excavating.
- D. Section 31 2323 - Fill: Material classifications for utilities.

1.3 DEFINITIONS

- A. Finish Grade and Utility Invert Elevations: Indicated on drawings.

1.4 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AASHTO 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; 2022, with Errata .
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)); 2012 (Reapproved 2021).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).
- I. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
- J. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- K. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. See Section 31 2323 for fill materials.

2.2 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, testing of samples for compliance shall be provided before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain
- D. Notify utility company to remove and relocate utilities.
- E. Protect site features to remain including, but not limited to, bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Protect plants, lawns, and other features to remain.
- G. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Owner's Representative.
- H. Maintain and keep in good working order, all warning lights, barriers, signs and other traffic control devices as required for the safety of the public and maintenance of traffic.

3.3 TRENCHING

- A. Notify Project Coordinator or Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Remove all topsoil from area to be trenched.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches sufficiently wide to enable safe installation and allow for safe construction. Notify Project Coordinator or Owner's Representative if plan details cannot be met or maintained. All excavation and trenching shall conform to current OSHA requirements and standards.

- E. Hand trim excavation for bell and spigot pipe joints and other appurtenant items. Remove or compact all loose soil under pipe to form firm bedding.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove excavated material that is unsuitable for re-use from site.
- H. Stockpile excavated material to be re-used in area designated on site.
- I. Remove excess excavated material from site.
- J. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Owner's Representative. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- K. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot (305 mm) into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Owner's Representative.

3.4 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill or, when directed by Project Coordinator or Owner's Representative, crushed rock.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.
- D. Utility installation shall conform to the specific requirements of the pipe manufacturer for the type of pipe used, with respect to pipe bedding, backfill, and fill material.

3.5 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density. See Section 31 2323.
- E. Pipe Bedding - Fill Type 4a: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- F. General Fill - Fill Type 1: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth where heavy, self-propelled compaction equipment will be utilized, or 6 inches compacted depth where hand-guided equipment will be utilized.
- G. Slope grade away from buildings a minimum 12 inches in first 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Correct areas that are over-excavated.
- I. Relative Compaction Density shall be per Section 31 2323.
- J. Reshape and re-compact fills subjected to vehicular traffic.

3.6 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Utility Piping:
 - 1. Bedding: Use Fill Type 4a.

2. Cover with General Fill - Type 1.
3. Compact in accordance with Section 31 2323 - Fill.

3.7 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1/2 inch from required elevations.

3.8 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"). See Section 31 2323 for compaction requirements.
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest. Contractor shall be responsible for all costs associated with additional testing required as a result of failed tests and/or substandard work.
- E. Frequency of Tests: See Section 31 2323.

3.9 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 2316
EXCAVATION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavating for exterior paving.
- B. Excavation and disposal of rocks.

1.2 RELATED REQUIREMENTS

- A. Section 01 5713 - Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- C. Section 31 2200 - Grading: Rough Grading Procedures.
- D. Section 31 2200 - Grading: Topsoil Removal and Replacement.
- E. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- F. Section 31 2323 - Fill: Fill materials, backfilling, and compacting.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Protect site features to remain including, but not limited to, bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Protect plants, lawns, and other features to remain.
- G. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Project Coordinator.
- H. Maintain and keep in good working order, all warning lights, barriers, signs and other traffic control devices as required for the safety of the public and maintenance of traffic.

3.3 EXCAVATING

- A. Underpin adjacent structures that could be damaged by excavating work.

- B. Excavate to accommodate new structures and construction operations.
- C. Notify Project Coordinator or Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- D. Cut excavations sufficiently wide to enable safe installation and allow for safe construction. Notify Project Coordinator or Owner's Representative if plan details cannot be met or maintained. All excavation shall conform to current OSHA requirements and standards.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.
- G. Provide temporary means and methods, as required, to remove all water from excavations until directed by Project Coordinator or Owner's Representative. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- H. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot (305 mm) into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Project Coordinator or Owner's Representative. If the proposed excavation extends more than 1 foot (305 mm) into the groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by the Geotechnical Engineer.
- I. Remove excavated material that is unsuitable for re-use from site.
- J. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.
- K. Remove excess excavated material from site.
- L. Rocks larger than 4 inches diameter, if any, may be reused onsite as Riprap or incorporated into landscaping, if specified.
- M. Rocks not reused onsite shall be removed from the property at the Contractor's expense.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Project Coordinator before placement of foundations.

3.5 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Unless otherwise stated in the plans, excavated rock shall become property of the Contractor and be hauled offsite, incidental to Common Excavation.
- B. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- C. For lump sum (LS) bid items, measurements will not be made.
- D. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 2323
FILL**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Backfilling and compacting for utilities.
- B. Subgrade preparation and base construction for paving.

1.2 RELATED REQUIREMENTS

- A. Section 01 5713 - Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 31 2200 - Grading: Topsoil removal and replacement.
- C. Section 31 2200 - Grading: Rough grading procedures.
- D. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.
- E. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- F. Section 32 1123 - Aggregate Base Courses: Base course installation beneath pavements.

1.3 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AASHTO 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; 2022, with Errata .
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)); 2012 (Reapproved 2021).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- J. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2015.
- K. ASTM D6817/D6817M - Standard Specification for Rigid Cellular Polystyrene Geofilm; 2017 (Reapproved 2021).
- L. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

- M. ASTM D7557/D7557M - Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens; 2009 (Reapproved 2021).
- N. North Dakota Department of Transportation (NDDOT) - Standard Specifications for Road and Bridge Construction; Current Edition.

1.4 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design of structural fill under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- D. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Fill materials shall conform to the requirements herein unless otherwise approved by the Geotechnical Engineer.
- B. General Fill - Fill Type 1: Material excavated on site and approved for use as backfill by Project Coordinator or Owner's Representative.
 - 1. Sandy, graded and compactible material.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, organics and debris.
- C. Structural Fill - Fill Type 2: To be utilized as foundation fill or as indicated on the plans:

- 1. Non-frost susceptible Sand per the following gradation:

Sieve Size	Percent Passing
3/8"	100%
No. 4	95%-100%
No. 16	45%-80%
No. 50	10%-30%
No. 100	0%-10%
No. 200	0%-5%

- D. Aggregate Base - Fill Type 3: To be used as aggregate base under pavements per Section 32 1123.
 - 1. Conforming to State of Minnesota Department of Transportation standard for Class 5 Aggregate Base.
- E. Pipe Bedding - Fill Type 4a
 - 1. Utilize existing excavated, sandy soil that does not contain rocks or hard chunks larger than 1/2-inch, if available. If material is not available on site,

provide sand from an outside source meeting the following gradation:

Sieve Size	Percent Passing
1/2"	100%
No. 4	60%-85%
No. 200	0%-10%

2. Pipe bedding shall conform to and be installed per pipe manufacturers requirements.

F. Crushed Rock - Fill Type 4b

1. Utilize crushed rock under manholes and inlets or where the bottom of trenches or excavations is wet or otherwise unsuitable and cannot support loads or provide adequate pipe support, as determined by the Owner's Representative. Crushed Rock shall conform to the following gradation:

Sieve Size	Percent Passing
1-1/2"	100%
1"	95%-100%
1/2"	25%-60%
No. 4	0%-10%
Fractured Faces	85%

G. Topsoil: See Section 31 2200.

H. Clay materials excavated on site and not defined above shall be utilized as approved by the Owner's Representative and in conformance with the recommendations provided by the Geotechnical Engineer.

2.2 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum.
- C. Verify areas to be filled are not compromised with surface or ground water.

3.2 SUBGRADE PREPARATION

- A. Scarify subgrade to a depth of 12 inches.
- B. Recompact with moisture and density control in accordance with Part 3.3 of this Section.
- C. The subgrade shall be recompact by approved compaction equipment. The surface after compaction shall be true to line, grade, and cross section.
 - 1. Approved compaction equipment shall include sheepsfoot rollers, pneumatic packers, mechanical packers, mechanical rammers, vibratory equipment, trucks, tractors, scrapers, motor graders, and all other types

- of equipment used in excavating, transporting, and placing the subgrade.
 - 2. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- D. Proof roll subgrade to identify soft or yielding areas.
 - 1. Subgrade shall be proof-rolled by the Contractor using suitable equipment (such as a fully loaded water truck or fully loaded dump truck or a tractor-trailer combination), approved for this purpose by the Owner's Representative, before placing and/or spreading operations.
 - 2. Any ruts, soft yielding areas, or areas where subgrade cannot be adequately compacted shall be corrected at the Contractor's expense.
 - 3. Cut out unsatisfactory subgrade areas. Backfill with general fill or other material as directed by Owner's Representative.
 - 4. Recompect corrected subgrade areas to moisture control and density equal to or greater than requirements for subsequent fill material and in accordance with Part 3.3 of this Section.
- E. Until ready to place aggregate base course, protect prepared subgrade from unnecessary vehicle traffic, moisture, and prevent loose soil from falling onto prepared subgrade.
- F. Verify installation of geotextile fabric and/or geo-grid where indicated on plans.

3.3 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density within the following ranges, unless otherwise noted or indicated on the plans or in a geotechnical evaluation:
 - 1. Granular Soils: +/- 3 percent.
 - 2. Cohesive Soils Below Exterior Slabs & Pavements: 0 to +4 percent.
 - 3. Cohesive Soils Below Grassed Areas: 0 to +6 percent.
- E. Pipe Bedding: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth. Bedding dimensions shall be in accordance with the plans, or per manufacturers requirements.
- F. Lift Thickness: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth where heavy, self-propelled compaction equipment will be utilized, or 6 inches compacted depth where hand-guided equipment will be utilized.
- G. Slope grade away from building minimum 12 inches in first 10 ft unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Relative Compaction Density shall be as follows per ASTM D698-Standard Proctor, unless otherwise noted or indicated on the plans or in a geotechnical evaluation:
 - 1. Under exterior slabs and pavement: minimum of 95% of maximum dry density.
 - 2. All other areas: minimum of 90% of maximum dry density.
- I. Reshape and re-compact fills subjected to vehicular traffic, or damaged or displaced due to construction operations.
- J. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Owner's Representative. Remove and replace soils deemed unsuitable by classification and which are

excessively moist due to lack of dewatering or surface water control.

3.4 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1/2 inch from required elevations.
- C. Top Surface of Aggregate Base under exterior slabs and pavements: Plus or minus 1/4 inch from required elevations.
- D. Top Surface of Aggregate Base under foundations and floor slabs: Plus or minus 1/4 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest. Contractor shall be responsible for all costs associated with additional testing required as a result of failed tests and/or substandard work.
- E. Frequency of Tests, unless otherwise noted or indicated on the plans or in a geotechnical evaluation:
 - 1. Below Exterior Slabs & Pavement: Provide one passing density and moisture test per lift of fill per 750 square yards of area.
 - 2. Below Grass and Landscape Planting Areas: If directed by Owner's Representative proof roll only. Provide density and moisture tests only where directed by Owner's Representative.
 - 3. Utility Trenches: Provide one passing density and moisture test per 30 inches of backfill per 300 feet of trench, and no less than one passing density and moisture test per service line, or more as directed by Owner's Representative, at top of subgrade elevation.

3.6 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 31 3721
GEOTEXTILE FABRICS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This work consists of furnishing and installing geotextile fabric.

1.2 REFERENCES

- A. MnDOT Standard Specifications for Construction, latest edition.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Submit product data sheet and certification from the Manufacturer that the product supplied meets the requirements of this Section.
- C. Submit Manufacturer's installation instructions and general recommendations.
- D. Submit substitution requests in accordance with Section 01 6000 for alternate materials.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Prevent excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to the geogrid materials.
- B. Store at temperatures above -20 degrees Fahrenheit (-29 degrees Celsius).
- C. Rolled materials may be laid flat or stood on end.
- D. Materials should not be left directly exposed to sunlight for a period longer than recommended by the Manufacturer.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Geotextile fabric shall be a fabric consisting of polymeric filament or yarns such as polypropylene, polyethylene, polyester, polyamide, or polyvinylidene chloride. The filaments or yarns shall be formed into a stable network so they retain their relative position to each other. The geotextile shall be inert to commonly encountered chemicals and meet the properties in MnDOT Standard Specifications Section 3733.
- B. Non-Woven Geotextile Fabric: For use as separation fabric.
 - 1. Non-Woven Separation fabric shall meet MnDOT Type 5 specifications.

PART 3 EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. General
 - 1. The surface receiving the fabric shall be smooth and free of stones, sticks, and other debris or irregularities that might puncture the fabric. The fabric shall be placed free of wrinkles and shall be protected at all times during construction. Construction equipment shall not be operated on the fabric.
 - 2. The fabric shall be overlapped a minimum of 18 inches at all splices or joints. In lieu of joint overlapping, multiple fabric pieces may be sewed if the seam strength meets the seam strength requirements listed in MnDOT Standard Specification Section 3733. A 401 stitch conforming to Federal Standard No. 75 1a shall be used for all seams. Overlapping "J" seams are required for field seams. All seams shall be sewn with two

parallel stitch lines spaced approximately 1/4 inch apart. The outside stitch shall be placed approximately 1 inch from the edge of the fabric. The thread shall be of a material that meets the requirements specified for the fabric.

3. The geotextile fabric and a certification of compliance shall be delivered to the project at least 21 days prior to its incorporation into the work. Fabric shall be approved by the Project Coordinator or Owner's Representative before installation.
4. If a fabric is tested and fails, any retests will be at the cost of the Contractor, unless the results of the retest show the fabric passes.
5. If the Project Coordinator or Owner's Representative allows installation and the fabric fails to meet the specified requirements a minimum price adjustment of 20 percent will be assessed to the bid price for any fabric installed. Actual penalties will be determined by the Project Coordinator or Owner's Representative, based on projected performance of fabric. If the failing fabric jeopardizes the integrity of the project, the fabric will be removed and replaced at the Contractor's expense.
6. If sewn seams are going to be used, the Contractor shall also furnish a sewn seam sample, using the same geotextile fabric, thread, seam spacing and number, and overlap distance as are intended or required for use in the work. To facilitate inspection and repair, the geotextile should be placed with all seams up. Sheepsfoot rollers shall not be used for compaction until a minimum of 3 feet of fill is covering the geotextile.
7. Fabric shall not be left uncovered for longer than five days. Fabric that is not covered within five days shall be removed and replaced at the Contractor's expense.
8. The fabric shall be secured using the manufacturer's recommended methods to hold the fabric in place during the construction activities.
9. Before placing the material on the fabric, the Contractor shall demonstrate that the placement methods will not damage the fabric. The Project Coordinator or Owner's Representative may order the removal of at least 4 square yards of material to inspect for fabric damage. Tears or rips in the fabric shall be patched with fabric lapped a minimum of 36 inches around the rip.

B. Geotextile Separation Fabric

1. When placing the fabric, the geotextile shall be unrolled in line with the placement of the new aggregate. The fabric shall not be dragged across the subgrade. Fabric widths shall be used so overlaps of parallel rolls occur at the centerline and at the shoulders. Overlaps shall not be placed along the wheel path locations. The 18 inch overlap at the end of the roll shall be in the direction of the aggregate placement so the previous roll laps over the subsequent roll.
2. The first lift above the separation fabric shall have a minimum depth of 9 inches before compaction. When the first layer of aggregate is placed, construction equipment shall be limited in size and weight so rutting in the initial lift is less than 3 inches. If rutting does occur additional aggregate shall be placed to fill the ruts. The ruts shall not be bladed out. Construction equipment shall not be turned on the first layer of aggregate

placed on the fabric.

- C. Shipping and Storage
 - 1. Geotextile labeling and identification shall comply with ASTM D4873-95. If a label is removed during sampling or other reasons, the roll must be relabeled.
 - 2. Packaging, handling, and storage of geosynthetics shall conform to ASTM D4873-95 and the following requirements:
 - a. Each Geotextile roll shall be wrapped with a waterproof cover or membrane for protection during shipping and storage.
 - b. Geotextiles shall not be exposed to ultraviolet light for more than 14 days and shall be elevated off the ground during storage.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If no bid item is provided on the bid form, the work described herein will be incidental to other related items of work. No measurement or additional payment will be considered.

END OF SECTION

**SECTION 32 1123
AGGREGATE BASE COURSES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aggregate base course: Preparation and installation.

1.2 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Preparation of site for base course.
- B. Section 31 2316.13 - Trenching: Compacted fill over utility trenches under base course.
- C. Section 31 2323 - Fill: Topsoil fill at areas adjacent to aggregate base course.
- D. Section 31 2323 - Fill: Compacted fill under base course.
- E. Section 32 1216 - Asphalt Paving: Finish and binder asphalt courses.
- F. Section 33 0561 - Manholes and Structures: Manholes including frames.

1.3 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AASHTO 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; 2022, with Errata .
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)); 2012 (Reapproved 2021).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- J. Minnesota Department of Transportation (MnDOT) - Standard Specifications for Construction, Current Edition.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When storing aggregate materials on site:
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Aggregate Base, see Section 31 2323 - Fill.
- B. Geotextile Fabric: See Section 31 3721 - Geotextile Fabrics.

2.2 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for general requirements for testing and analysis of aggregate materials.
- B. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.2 PREPARATION

- A. Prepare subgrade and proof roll in accordance with Section 31 2323 - Fill:
 - 1. If specified in the plans, Geotextile Fabric or Geo-Grid per Section 31 3721 - Geotextile Fabrics shall be installed above subgrade prior to placement of base course.
 - 2. Do not place aggregate on soft, muddy, or frozen surfaces.

3.3 INSTALLATION

- A. Except where specified elsewhere, maximum compacted lift depth of aggregate base layers shall be 6 inches.
- B. Level and contour surfaces to elevations and gradients indicated.
- C. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- D. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

- A. Flatness: Maximum variation of 1/2 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation From Design Elevation: Within 1/4 inch.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for general requirements for field inspection and testing.

3.6 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 32 1216
ASPHALT PAVING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Multiple course asphalt pavement - roadways.

1.2 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AI MS-2 - Asphalt Mix Design Methods; 2015.
- C. AI (Asphalt Institute) MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types; The Asphalt Institute; current edition.
- D. AI MS-3 - Asphalt Plant Manual.
- E. AI MS-19 - Basic Asphalt Emulsion Manual; 2008.
- F. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- G. AI MS-22 - Principals of Construction of Hot Mix Asphalt Pavements.
- H. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.
- I. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).
- J. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- K. ASTM D2041/D2041M - Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures; 2011.
- L. ASTM D2950/D2950M - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods; 2014.
- M. ASTM D6927 - Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures; 2015.
- N. ASTM D6925 - Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by means of the Superpave Gyrotory Compactor; 2015.
- O. Minnesota Department of Transportation (MnDOT) - Standard Specifications for Construction; Current Edition.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Minnesota Department of Transportation standard specifications for Commercial Grade Hot Mix Asphalt.
- B. Provide asphalt mix design no less than 15 days prior to beginning construction.
- C. Provide Project Coordinator or Owner's Representative with Manufacturers written certification that each transport load of asphalt cement (A.C.) meets the requirements of the specification.
- D. Mixing Plant: Complying with MnDOT specifications.
- E. Obtain asphaltic mix materials (aggregate and bitumen) from same source throughout entire project. Provide new mix design any time a change in source is made.

1.4 REGULATORY REQUIREMENTS

- A. Minnesota Pollution Control Agency (MPCA):
 - 1. Solid Waste Division for disposal of debris.
 - 2. Water Quality Division for storm water runoff and erosion control.
 - 3. Air Quality Division for clean air standards.

1.5 FIELD CONDITIONS

- A. Do not place asphalt when temperatures are below those shown below:

Compacted Thickness	Air Temp for Surface Course	Air Temp for Subsurface Course	Existing Mat
1-1/2" or less	45 degrees F	40 degrees F	40 degrees F
More than 1-1/2"	40 degrees F	35 degrees F	40 degrees F

PART 2 PRODUCTS

2.1 MATERIALS

- A. Bituminous Materials. Conform to the requirements of Section 3151 of the MnDOT Standard Specifications.
- B. Aggregate for Mix: Conform to the requirements of in Section 3139 of the MnDOT Standard Specifications.
- C. Recycled Asphalt Pavement (RAP).
 - 1. RAP may be incorporated at a rate between 10 and 25 percent by weight.
 - 2. Maximum particle size of 1.5 inch.
 - 3. Do not allow recycled material to come in contact with the burner flame. Add binder to the combined virgin aggregate and recycled material.

2.2 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Mix Design: Conform to MnDOT Standard Specifications, Section 3151.
 - 1. Roadways
 - a. Mix design shall be Superpave FAA 42 or FAA 43 and 58S-28 asphalt cement.
 - b. RAP mixtures be allowed.
- B. For batch or continuous mix plants, heat and dry aggregate to reduce the total moisture content to one-half of 1 percent or less, based on the dry weight of the aggregate.
- C. When the drum dryer mixer is used, do not allow the moisture content of the bituminous mixture to exceed 1 percent.
- D. Assure accurate proportioning into the mixer by feeding stockpiled aggregate in two or more compartments that can be accurately controlled to supply the proper mixture of aggregate.
- E. Introduce all materials uniformly into the mixing plant or the drum dryer in the proportions necessary to produce the required quality. Proportion bitumen within plus or minus 0.24 percentage points of the percentage of bitumen designated by the Owner's Representative.
- F. Introduce the required quantities of aggregate and bitumen into the mixer and mix until a uniform and complete coating of aggregate is obtained.
- G. The temperature of the bituminous mixture at discharge from the mixer must not exceed 300 degrees F.

- H. Submit proposed mix design of each class of mix for review prior to beginning of work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that compacted subgrade and/or aggregate base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct prior to beginning any pavement operations.
- C. Verify utility castings are properly adjusted to grade prior to beginning paving operations.

3.2 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with MnDOT Standard Specifications.
- B. Apply tack coat to contact surfaces of curbs and gutters and other concrete appurtenances.
- C. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.
- D. DO NOT mix different classes, grades or types of emulsified asphalt in storage tanks, transports or distributors.
- E. Always pump from bottom of tank.
- F. Always maintain proper distributor spray bar height and spray nozzle angle.
- G. Always maintain proper distributor speed.
- H. Always sweep and clean surfaces to be tack coated.
- I. Never apply more tack coating than can be covered by the same day's operation.

3.3 PLACING ASPHALT PAVEMENT

- A. Place asphalt base course within 24 hours of applying primer or tack coat.
- B. Place base and wearing courses to compacted thickness specified in plans.
- C. Maintain a mix laydown temperature of no less than 230 degrees F when ambient temperature is 60 degrees F or higher. When ambient temperature is below 60 degrees F, place mix with a minimum laydown temperature of 250 degrees F.
- D. Spread and finish all mixtures with a self-propelled, bituminous paver, to the required section, leaving the mixture uniformly dense, smooth, and free from irregularities. In locations where it is impractical to use self-propelled bituminous pavers, or other types of lay-down equipment, a road grader or maintainer may be used if approved by the Owner's Representative.
- E. Control the speed of paver to place the mixture uniformly and continuously without tearing or gouging. Do not exceed the Manufacturer's recommendation, and coordinate the paver speed with the output of the plant to provide for a smooth, continuous operation, minimizing starting and stopping.
- F. Level, fill or rake all transverse and longitudinal joints, high or low areas, and surface irregularities, prior to compaction. Immediately remove material dropped on previously compacted lanes.
- G. Sweep and tack previously placed layer or surface before spreading the next layer.
- H. Tack all joints and coordinate vertical construction joints in successive courses so the joints do not fall on the same vertical plane.

- I. Place pavement uniformly against the surface or edge of curb, gutters, manholes or similar structures, and at such an elevation so that the pavement is ¼-inch higher than the edge of the structure after the pavement has been compacted.
- J. Correct any low or high defective areas immediately. Correction can be accomplished by patching or cutting out the surface and replacing with fresh, hot, bituminous mixture, or by milling the surface.
- K. The sequence of rolling operations as well as the type and number of rollers must be commensurate with production, and adequate to obtain the specified density before the mat temperature falls below 185 degrees F.
- L. Thoroughly compact with hand or other mechanical tampers approved by the Owner's Representative any areas not accessible to standard asphalt rollers.
- M. Remove and replace any mixture that becomes loose, broken, or becomes mixed with dirt, shows any excess deficiency of bitumen, or is defective in any manner.
- N. Do not place hot mix on a frozen subgrade, or when weather conditions prevent the proper handling or finishing of the asphalt pavement. Presence of frost particles in or on the subgrade or base course is considered a frozen subgrade.
- O. Compact asphalt pavement sloughs with rollers capable of providing a smooth, finished, compacted slough that is free of tire marks and unevenness or drop-off.
- P. Adjust any casting that is not ¼-inch below the top of the finished surface. Adjust casting upward if greater than ¼-inch below the top of the finished surface.

3.4 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/8 inch.
- D. Asphalt cement content within 0.24 percent of approved mix design as determined by daily cutoff report.
- E. Adjacent surface match: New finished surface must be ¼-inch above any adjacent surface.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.
- B. Asphalt paving mixture shall be field sampled and tested for conformance with the mix design at intervals of one (1) test per 1,000 tons of asphalt pavement produced, or a minimum of one (1) test per lift of pavement per day.
 - 1. For each sample, the Testing Laboratory shall run oil extraction and gradation of the mix, as well as Gyratory Gravity.
- C. The density of the compacted asphalt pavement shall be tested with a nuclear density gauge at a frequency of one (1) test per 1,500 square yards per lift of asphalt pavement, or a minimum of one (1) test per lift of pavement per day.
 - 1. Field density by displacement method (core samples) is not required.

3.6 CLEANUP AND PROJECT CLOSEOUT

- A. Return all disturbed areas to a condition equal to that prior to construction. Clean, remove and dispose of all debris and residue.
- B. Sweep all streets or adjacent paved surfaces following paving.

3.7 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees F (60 degrees C).

- B. Do not allow traffic on the completed surfacing until the mat has been compacted and has cooled sufficiently to prevent damage.
- C. Damage to the asphalt pavement due to inadequate protection shall be repaired by the Contractor to the satisfaction of the Owner's Representative at no cost to the Owner.

3.8 PROJECT RECORD DOCUMENTS

- A. Record all underground utilities raised or lowered and furnish a copy of "as constructed" plans to the Project Coordinator or Owner's Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 32 9219
SEEDING**

PART 1 GENERAL

1.1 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.2 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.3 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Seed Mixture:
1. Type 2: Non-Irrigated Seed Mix - General:
 - a. Fairway Crested Wheatgrass: 50%
 - b. Sheeps Fescue: 30%
 - c. Perennial Ryegrass: 20%
 - d. Application Rate: 8 pounds per 1,000 square feet.
- B. Substitutions: See Section 01 6000 – Product Requirements. Seed mix substitutions must be submitted to Owner’s Representative in writing, and approved by Owner, prior to bidding.

2.2 ACCESSORIES

- A. Mulching Material: Wood cellulose fiber, dust form, free of growth or germination inhibiting ingredients. Apply hydro-mulch at a rate of 750 pounds per 10,000 square feet.
- B. Fertilizer: 15 pounds/ 10,000 square feet; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil.
- C. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.2 PREPARATION

- A. Prepare subgrade in accordance with Section 31 2200.
- B. Place topsoil in accordance with Section 31 2200.

3.3 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.4 SEEDING

- A. Apply seed at rate appropriate to seed type listed on Plan.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller not exceeding 112 lbs, use caution to not over compact soil.
- E. Apply in two even applications, applications shall be perpendicular to each other.
- F. Immediately following seeding and compacting, apply hydromulch to a thickness of 3/16 inches. Maintain clear of shrubs and trees.
- G. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- H. Following germination, immediately re-seed areas without germinated seeds that are larger than 2 by 2 inches.

3.5 HYDROSEEDING

- A. Apply seeded slurry with a hydraulic seeder at a rate of 8 lbs per 1000 sq ft evenly in two intersecting directions.
- B. Do not hydroseed area in excess of that which can be mulched on same day.
- C. Immediately following seeding, apply mulch to a thickness of 3/16 inches to areas indicated on plan. Maintain clear of shrubs, trees and structures.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.6 PROTECTION

- A. Cover seeded slopes where grade is 4 inches per foot or greater with erosion control blanket. Unroll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.7 MAINTENANCE

- A. Provide maintenance of seeded areas for three consecutive months during during the growing season following the Date of Final Review and Acceptance at no extra cost to Owner.

- B. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- C. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- D. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- E. Neatly trim edges and hand clip where necessary.
- F. Immediately remove clippings after mowing and trimming.
- G. Water to prevent grass and soil from drying out.
- H. Roll surface to remove minor depressions or irregularities.
- I. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- J. Immediately reseed areas that show bare spots.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measure seeding and mulching by the square yard (SY) as measured by the Owner's Representative.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment and materials.
- B. Any required reseeding shall be incidental.
- C. Payment shall be fifty percent at the time of seeding and mulching. Final payment for seeding shall not be issued until the grass is established and accepted by the Owner. Established seeding shall mean weed free with no bare spots larger than four (4) square inches.

END OF SECTION

**SECTION 33 0110.58
DISINFECTION OF WATER UTILITY PIPING SYSTEMS**

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. AWWA B300 - Hypochlorites; 2018.
- B. AWWA B301 - Liquid Chlorine; 2018.
- C. AWWA B302 - Ammonium Sulfate; 2023.
- D. AWWA B303 - Sodium Chlorite; 2018.
- E. AWWA C651 - Disinfecting Water Mains; 2014, with Addendum (2020).

1.2 QUALITY ASSURANCE

- A. Submit bacteriologist's signature and authority associated with testing.
- B. Test all samples at a certified laboratory, approved by the Minnesota Department of Health.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Do not dispose of disinfection chemicals or water with concentrations of more than 2 mg/l of disinfectant into the environment. Dilute any concentrations greater than 2 mg/l prior to discharge.
- B. Do not discharge chlorinated flush water directly into storm or sanitary sewer systems. Flush water shall either be de-chlorinated or discharged into a prepared area at ground surface.
- C. Properly dispose of all chemical containers.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Certify all disinfectant products as meeting applicable AWWA Standards.
- B. Chemicals: AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, and AWWA B303 Sodium Chlorite.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that piping system has been cleaned, inspected, and pressure tested, and that all services are turned off.
- B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.2 DISINFECTION

- A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.
- B. Provide and attach equipment required to perform the work.
- C. Inject treatment disinfectant into piping system.
- D. Chlorine applications shall be made in accordance with AWWA C651.

- E. All valves and hydrants in the section treated shall be operated during this time in order to disinfect the appurtenance.
- F. Heavily chlorinated water should not remain in prolonged contact (maximum of 48 hours) with the water main pipe.
- G. The chlorine shall be flushed from the main through hydrants and taps until all excess chlorine has been removed; use municipal domestic water.
- H. Replace permanent system devices removed for disinfection.

3.3 TOLERANCES

- A. A plate count of "zero" is required on the bacteriological test.
- B. The feed or application rates stated herein are for general guidance only. Refer to AWWA C651 for exact limits.

3.4 FIELD QUALITY CONTROL

- A. Two consecutive sets of acceptable samples shall be taken for each 1,200 foot segment of the system tested. Tests shall be at least 24 hours apart.
- B. Sampling, testing and testing frequency shall be performed in accordance with AWWA C651.
- C. The testing laboratory shall test for coliforms and e-coli using the "Colilert" or other Owner's Representative approved equivalent test. The "Colilert" test is a pass/fail test that does not quantify the amount of bacteria. Any presence of coliforms or e-coli shall qualify as a failed test.
- D. If the initial disinfection fails to produce satisfactory bacteriological results, the new main may be reflashed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

3.5 CLEANUP AND PROJECT CLOSEOUT

- A. Clean up and properly dispose of all chemicals and containers.
- B. Drain any standing water from flushing.

PART 4 MEASUREMENT AND PAYMENT

**ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK.
NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.**

END OF SECTION

**SECTION 33 0520R
MANHOLE REHABILITATION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This work will consist of the complete rehabilitation of the existing manholes as specified in the bid documents and as directed by the Engineer.
- B. The manhole barrel shall be rehabilitated with an approved method. The rehabilitation will have to be structurally sound and cannot reduce the inside diameter of the existing barrel by more than 6". Any voids shall be filled with approved materials.

1.2 REFERENCE STANDARDS

- A. All ASTM standards related to the installation of each approved product shall be adhered to.

1.3 SUBMITTALS

- A. Submittals are required for all materials used in this section.
- B. Design Conditions: Wall thickness design calculations for each structure to be rehabilitated utilizing the specific product must be submitted during the shop drawing review. Each liner must become the structural element for the manhole.
- C. Product Data. Submit product data on each product used, including surface preparation instructions and application instructions from manufacturer of repair materials. Submittal shall consist of:
 - 1. Technical data sheet on each product used, including ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
 - 2. Material Safety Data Sheets (MSDS) for each product used.
 - 3. Project specific guidelines and recommendations.
- D. Installer Qualifications. Installers shall submit qualifications to Engineer at least 14 days prior to start of any material application. Submittal shall consist of:
 - 1. Manufacturer certification that the Applicator personnel has been trained in the handling, mixing and application of the products to be used.
 - 2. Certification that the equipment to be used for applying the products has been approved by the protective coating manufacturer and Applicator personnel have been trained and certified for proper use of the equipment.
 - 3. Written document providing three (3) years' experience.
- E. Bypass pumping plan.
 - 1. Intake manhole.
 - 2. Service over pumping.
 - 3. Receiving manhole.
 - 4. Expected flows.
 - 5. Pump size.
 - 6. Pipe layout.
 - 7. Backup equipment.
 - 8. Procedures to monitor upstream mains for backup impacts.
- F. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage.
- G. Record Keeping

1. Certified statement from manufacturer that Contractor is approved installer of the material or system with certificates of training for each crew member involved in each process from manufacturer.
 2. For each manhole rehabilitated, complete and accurate record of work completed.
 3. Show identifying number and location, quantities of rehabilitation material used, estimate of infiltration/inflow eliminated, and results of post-rehabilitation inspection.
- H. Field test reports.
- I. Follow requirements in Section 01 3000 – Submittals.

1.4 COORDINATION

- A. Contractor shall coordinate all construction with Owner and other Contractors to minimize any interruption of service.
- B. Contractor shall assume full responsibility for all damages to property resulting from any act, omission, neglect or misconduct in the execution or non-execution of the Work.
- C. Any damages shall be restored to pre-damaged condition.

1.5 WARRANTY

- A. Contractor shall warrant and guarantee that all materials and equipment furnished and work performed is free of defects.
- B. The guarantee shall be for three (3) years from the date of the final review and acceptance form.
- C. Contractor shall promptly make any corrections as may be necessary by reason of such defects including the repairs of any damages to other parts of the system resulting from such defects.
- D. The Owner will give notice of observed defects with reasonable promptness.
- E. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Never discharge any raw, untreated wastewater or debris into the environment.
- B. Properly dispose of all solid waste materials in an approved location.

1.7 PERSONNEL REQUIRED

- A. The Contractor shall furnish a trained supervisor who has had a minimum of two (2) years' experience in the entire field of sewer and manhole rehabilitation such as will be undertaken in the project, and sufficient personnel to perform all the work required.

1.8 QUALIFICATIONS OF BIDDERS

- A. No proposal will be considered from any bidder unless they are known to be skilled in work of a similar nature to that covered by the contract and has sufficient bonding capacity to meet all obligations to be incurred in carrying out the work.
- B. In addition, the Contractor shall be able to provide conclusively that they have the following:
 1. Two (2) years' experience in the field of manhole rehabilitation with their proposed product.
 2. Must be an approved applicator through the Manufacturers of the manhole rehabilitation product.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Spraywall by Sprayroq, Inc.
- B. Mainstay Composite Liner by Madewell Products Corp.
- C. Or Approved Equal
 - 1. Contractors requesting a product to be added as an approved equal shall submit to the Engineer a cover letter requesting their product and include the following: 4 references, a list of projects where this product was used by the contractor, all technical data sheets and product information that may be required to determine the products ability to meet the Owner's needs.

PART 3 EXECUTION

3.1 PREPARATION

- A. Ensure all traffic control is in place.
- B. Verify that all required materials are on site.
- C. The interior of the manholes shall be thoroughly cleaned, and all foreign materials shall be removed.
- D. Seal all active leaks by approved methods based on the products recommendations.

3.2 MANHOLE RECONSTRUCTION

- A. The Contractor shall install the approved product per the manufacture's recommendations.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 33 0561
MANHOLES AND STRUCTURES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Monolithic concrete manholes with masonry transition to lid frame, covers, anchorage, and accessories.
- B. Modular precast concrete manhole sections with tongue-and-groove joints with masonry transition to lid frame, covers, anchorage, and accessories.

1.2 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges; 2005, with Errata.
- B. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM C55 - Standard Specification for Concrete Building Brick; 2023.
- E. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections; 2019.
- F. ASTM C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections (Metric); 2019.
- G. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2018.
- H. ASTM C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric); 2018.
- I. ASTM C1634 - Standard Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units; 2023a.

1.3 QUALITY ASSURANCE

- A. Manufacturers must certify in writing, if requested by Owner's Representative, that all manholes, curb inlets, catch basins and appurtenances were constructed within the guidelines of the appropriate ASTM specifications.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- C. Precast sections shall be legibly stamped with casting date.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Manufacturer is responsible for providing specific instructions for the proper delivery, storage and handling.
- B. Install manholes, curb inlets, catch basins and components without damage. Immediately remove any damaged components from the project site.

1.5 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.1 CONCRETE MANHOLES

- A. Weight Rating: H 10 according to AASHTO HB.

2.2 MATERIALS

- A. Precast Reinforced Concrete Pipe Manhole with Monolithic Base:

1. Precast reinforced concrete manhole risers and top sections shall conform to ASTM C478.
 2. The base and the bottom section shall be cast monolithically with precast flow lines. The pipe connections to the manhole shall be Press-Seal Gasket Corporation model Press-Boot or an approved equal.
 3. All barrel to barrel joints shall be sealed using a rubber o-ring gasket. Height of the manhole shall be shown on the plans and the diameter shall be 48 inches minimum or larger if recommended by the manhole fabricator and approved by the Owner's Representative.
 4. Steps shall not be placed in manholes unless specified. If specified, the steps to be furnished and installed shall be rubber coated over steel reinforcing of the type manufactured by the Delta Products (Delta-Surefoot Company) or approved equal.
 5. Sanitary manholes shall be equipped with an eccentric reducing cone. Storm and air release manholes shall be equipped with a precast cover slab with Type 2 butt joint.
- B. Connectors for Sanitary Sewer and Air Release Manholes: Flexible gasket connectors equal to "PSX" as manufactured by Press-Seal Gasket Corporation.
- C. Manhole Adjusting Rings: Modular reinforced precast concrete or polyethylene adjusting rings.
- D. Sealant: Butyl rubber, 1"x1" in roll form on paper, equal to "E-Z Stick" as manufactured by Press-Seal Gasket Company.
- E. Manhole Invert: Portland cement concrete with a 28-day compressive strength of 3000 psi.
- F. Chimney Seal: All manhole chimneys shall be equipped with an external chimney seal as manufactured by Rinker Materials, or approved equal.
- G. Mortar: Mortar shall be a compound of one (1) part Portland Cement to two (2) parts of sand by volume to which hydrated lime may be added not to exceed 10 percent of the cement by weight.

2.3 COMPONENTS

- A. Solid lid shall be self self sealing and frame castings for manholes shall be as manufactured by Neenah Foundry, Inc. (model R-1733), East Jordan Iron Works (model 1205), or approved equal.

2.4 MANUFACTURERS

- A. North Dakota Concrete Products (Rinker Materials) - Precast manholes, curb inlets and catch basins, precast adjusting rings.
- B. Neenah Foundry Co. - Manhole, curb inlet and catch basin frames and lids.
- C. East Jordan Iron Works - Manhole, curb inlet and catch basin frames and lids.
- D. Press Seal Gasket Corporation - Rubber sealant; flexible gasket connectors.
- E. Rinker Materials - Manhole chimney seals.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for structures are correct.
- D. Verify height of structure; account for minimum of two 2" adjusting rings.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipes or duct sleeves required by other sections.

3.3 INSTALLATION

- A. Establish elevations and pipe inverts for inlets and outlets as indicated in drawings.

3.4 MANHOLES

- A. Place base on stable, level subgrade.
- B. Place sections plumb and level.
- C. Install joint sealant between all sections.
- D. Backfill and compact uniformly around structures to required density. See Section 31 2323 for fill types and density requirements.
- E. Set adjusting rings, frame and cover to correct elevation. Coordinate with other adjacent work as necessary.
 - 1. Install internal chimney seals per manufacturer recommendations (sanitary manholes).
 - 2. This item includes all labor, materials, and equipment necessary to adjust the various castings to the proper line and grade. Note that wood shims to adjust rings and castings are not allowed. Changes in grade shall be made as follows:
 - a. With Concrete Adjusting Rings
 - 1) The maximum height of adjustment is 6 inches. Adjustments shall be made with a maximum of two (2) precast adjusting rings whenever possible. Fine adjustments shall be made by adjusting mortar depths. The castings shall be laid in a full bed of mortar not less than 1/2" in depth. The rings and cone section shall be cleaned to assure a flat seating surface and the rings installed in alignment with no noticeable offsets. Broken pieces and partial sections of adjusting rings are not allowed. Adjusting rings must be one continuous piece.
 - b. With Polyethylene Adjusting Rings
 - 1) The maximum height of adjustment is 6 inches. Adjustments shall be made with polyethylene adjustment rings. The cone shall be cleaned and the rings dry stacked to determine the best ring height and slope ring combination to obtain the proper height and slope match. Once this is determined, the rings shall be marked with a vertical line for future reference and disassembled. A 1/4 inch bead of butyl caulk shall be applied to the cone surface and the first ring placed on the cone section. Another head of butyl caulk shall be placed on the bottom of the next ring as close as possible to the male lip and this ring installed interlocking with the first and aligning the vertical line. This procedure is repeated for each adjustment ring, including caulking the joint between the slope ring and the casting.
 - 3. Care shall be taken to adjust the casting to the proper grade so the final riding surface is smooth, free of bumps and conforms to the alignment and grade of the adjoining concrete. Any castings not satisfying these requirements shall be redone to the satisfaction of the Owner's Representative. Castings shall be set 1/4 inch below the finished surface.

4. The casting to grade item also includes cleaning all construction debris or dirt from the manhole or inlet bottom and installing a wiped mortar finish around the inside circumference of the precast concrete adjusting rings.
- F. Form inverts, if necessary, with cast-in-place concrete, carefully finishing and troweling to true shape of the lower half of the sewer pipe and sloping up of the manhole, providing positive drainage to the flow line and effluent. Flow line of invert shall be smooth finish.
- G. Plug all lift holes with mortar.
- H. Coordinate with other sections of work to provide correct size, shape, and location.

3.5 TOLERANCES

- A. Final elevations for inverts and rim shall be within plus or minus 0.02 feet (1/4-inch) of the specified or staked elevation.
- B. Finished manhole elevations shall be 1/4-inch lower than finished pavement grade.

3.6 FIELD QUALITY CONTROL

- A. Provide proper compaction around manholes, curb inlets and catch basins.
- B. Check for proper invert flow.
- C. Check for infiltration and exfiltration and correct if necessary.
- D. Regularly check temporary sewage handling equipment and piping (if in use) to avoid spills or backup.

3.7 CLEANUP AND PROJECT CLOSEOUT

- A. Clean all debris from manholes, curb inlets and catch basins. Individually remove cover and check each one.
- B. Properly adjust all frames to the proposed grade.

3.8 PROJECT RECORD DOCUMENTS

- A. Provide Project Coordinator with a complete set of "as constructed" plans.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 33 1143
HORIZONTAL DIRECTIONAL DRILLING**

PART 1 GENERAL

1.1 DESCRIPTION

- A. This section specifies fusible polyvinylchloride pipe, including acceptable fusion technique and practice, safe handling and storage, and installation of the pipe by horizontal directional drilling or directional boring or guided boring.
- B. Contractor shall provide a structurally sound, leak proof, monolithic polyvinylchloride pipe for all piping identified for installation by horizontal directional drilling. Individual pipe lengths shall be assembled by butt-fusion unless otherwise specified. Connecting fittings shall be fused or mechanically joined to the piping as specified. Contractor shall also be responsible for all installation processes included drilling, back reaming, management and disposal of all drilling fluid, dewatering flow around his work, and leak testing the fusible polyvinylchloride pipe and fittings in accordance with these specifications.
- C. Supplier shall furnish fusible polyvinylchloride pipe conforming to all applicable standards and procedures, and meeting all applicable testing and material properties as described by those standards or within this specification.

1.2 QUALITY ASSURANCE

- A. References:
 - 1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
 - 2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of construction. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.
 - 3. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

References	Titles
ANSI/AWWA C110/A21.10	American National Standard for Ductile Iron and Gray Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids
ANSI/AWWA C104/A21.4	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings; American Water Works Association; 2008 (ANSI/AWWA C104/A21.4).
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; 2012 (ANSI/AWWA C111/A21.11).

AWWA C605	Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
AWWA C651	Standard for Disinfecting Water Mains
AWWA C900	Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch through 12 inch, for Water Distribution
AWWA C905	Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 inch through 48 inch, for Water Distribution
AWWA M23	AWWA Manual of Supply Practices PVC Pipe - Design and Installation, Second Edition
AWWA M28	AWWA Manual – Rehabilitation of Water Mains
ASTM C495	Standard Test Method for Compressive Strength of Lightweight Insulating Concrete
ASTM C923	Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
ASTM D638	Tensile Properties of Plastics
ASTM D1238	Flow Rates of Thermoplastics by Extrusion Plastomer
ASTM D1505	Standard Test Method for the Density of Plastics by the Density-Gradient Technique
ASTM D1784-02	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D1785	Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D2122	Determining Dimensions of Thermoplastic Pipe and Fittings Test Method for Degree of Fusion of Extruded
ASTM D2152	Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
ASTM D2241	Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
ASTM D2665	Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
ASTM F477	Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F1057	Standard Practice for Estimating the Quality of Extruded Poly (Vinyl Chloride) (PVC) Pipe by the Heat Reversion Technique
ASTM F1417	Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air
UNI-PUB-6	Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe
UNI-PUB-8	Recommended Practice for the Direct Tapping of Polyvinyl Chloride (PVC) Pressure Water Pipe (Nominal Diameters 6-12 Inch)
NSF-14	Plastics Piping System Components and Related Materials
NSF-61	Drinking Water System Components - Health Effects

1.3 MANUFACTURER REQUIREMENTS

- A. Fusible polyvinylchloride pipe shall be tested at the extrusion facility for properties required to meet all applicable parameters as outlined in AWWA C900, AWWA C905, and applicable sections of ASTM D2241. Testing priority shall be in conformance with AWWA C900 and AWWA C905.

1.4 FUSION TECHNICIAN REQUIREMENTS

- A. Fusion Technician shall be fully qualified by the pipe supplier to install fusible polyvinylchloride pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

1.5 SPECIFIED PIPE SUPPLIERS

- A. Fusible polyvinylchloride pipe shall be used as manufactured under the trade names Fusible C-900®, Fusible C-905®, and FPVC™, for Underground Solutions, Inc., Poway, CA, (858) 679-9551. Fusion process shall be as patented by Underground Solutions, Inc., Poway, CA, Patent No. 6,982,051. Owner and Owner's Representative are aware of no other supplier or fusible polyvinylchloride pipe that is an equal to this specified pipe supplier and product.

1.6 WARRANTY

- A. A one year warranty for the pipe shall be included, and shall cover the cost of replacement pipe and freight to project site, should the pipe have any defects in material or workmanship.
- B. In addition to the standard pipe warranty, the fusing Contractor shall provide in writing a warranty for a period of one year for all the fusion joints, including formation, installation, and pressure testing.
- C. Warranty periods shall begin on the date of installation and product acceptance after all applicable testing.

1.7 SUBMITTALS

- A. The following PRODUCT DATA is required from the pipe supplier and/or fusion provider:
 - 1. Name of the pipe manufacturer and a list of the piping and quantities to be provided by manufacturer.
 - a. Product data and pipe supplier data indicating conformance with this specification and applicable standards, including written documentation regarding any intended variance from this specification and applicable standards. This will include experience of pipe supplier by years and number of projects; warranty information; and independent laboratory testing certification.
 - b. Material and pipe property testing in conformance with this specification and applicable standards indicating conformance from the pipe extruder per AWWA C900 and AWWA C905:
 - 1) Dimensional Checks
 - 2) Pipe Burst
 - 3) Flattening
 - 4) Extrusion Quality (Acetone Immersion)
- B. Test results will be prepared and made available from the pipe extruder to the Owner or Owner's Representative upon request, for each extrusion run.

- C. Fusion joint data and fusion technician data indicating conformance with this specification and applicable standards, including written documentation regarding any intended variance from this specification and applicable standards. This will include fusion joint warranty information and recommended project specific fusion parameters, including criteria logged and recorded by data logger.
- D. Material, pipe property, and dimensional data for casing pipe, if used.
- E. The following PRODUCT DATA AND INFORMATION is required from the Contractor and/or horizontal directional drilling Contractor:
 - 1. Directional drilling equipment information and certification indicating the applicability of equipment commensurate with the size and scope of the project.
 - 2. Directional drilling operator certification and references, project scope and owners' contact information for the experience commensurate with the size and scope of the project.
 - 3. Shop drawings which will include for each HDD installation any excavation locations, interfering utilities, excavation dimensions, bore dimensions and locations, project specific soil conditions, stress calculations and traffic control schematics.
 - 4. A project safety and contingency plan which shall include but shall not be limited to drilling fluid containment and cleanup procedures, equipment and plan for compromised utility installations including electrical and power lines, water, wastewater and any other subsurface utility.
 - 5. At least two weeks prior to the start of work, the Contractor shall submit his HDD schedule identifying daily work hours and working dates for each installation.
 - 6. Information about the drilling fluid to be used, including product information, material specifications, and handling procedures; material safety data sheet and special precautions required; methods of mixing and application; and disposal plan.
- F. The following AS-RECORDED DATA is required from the Contractor and/or fusion provider:
 - 1. Fusion report for each fusion joint performed on the project, including joints that were rejected. Submittals of the Fusion Technician's joint reports are required as requested by the Owner or Owner's Representative. Specific requirements of the Fusion Technician's joint report shall include:
 - a. Pipe Size and Dimensions
 - b. Machine Size
 - c. Fusion Technician Identification
 - d. Job Identification Number
 - e. Fusion Number
 - f. Fusion, Heating, and Drag Pressure Settings
 - g. Heat Plate Temperature
 - h. Time Stamp
 - i. Heating and Cool Down Time of Fusion
 - j. Ambient Temperature
 - 2. As-recorded plan and profile data for the actual alignment of the installed pipeline.
 - a. The as-recorded plan will reflect horizontal offset from the baseline and depth of cover, a maximum of every 25 feet and at all changes in direction, whichever is less.
 - b. All fittings, valves, or other appurtenances will also be referenced and shown.

- c. This document, along with tracking log sheets, should they be used, shall be provided to the Owner and/or the Owner's Representative. Tracking log sheet data, should it be employed, shall include any and all that apply, including position, roll angle, tilt angle, depth, and hydraulic pull back force measured.
- d. As-recorded plans shall show any deviations from the original plans.

G. Follow requirements in Section 01 0135 - Submittals.

PART 2 PRODUCTS

2.1 FUSIBLE POLYVINYLCHLORIDE PRESSURE PIPE FOR POTABLE WATER

- A. Fusible polyvinylchloride plastic material for pipe shall conform to AWWA C900 or C905, ASTM D1784, and cell classification 12454. Pipe shall be in accordance with ASTM D2241 for IPS standard dimensions as indicated in these specifications. Compound formulation shall be in accordance with PPI TR-2/2006.
- B. Pipe shall be manufactured with 100% virgin resin.
- C. Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
- D. Fusible polyvinylchloride pipe shall be manufactured in a standard 20 foot, 30 foot or 40 foot nominal lengths.
- E. Fusible polyvinylchloride pipe shall be blue in color.
- F. Pipe shall be marked per AWWA C900 or AWWA C905, and shall include as a minimum:
 - 1. Nominal size
 - 2. PVC
 - 3. Dimension Ratio, Standard Dimension Ratio or Schedule
 - 4. AWWA pressure class or rating
 - 5. AWWA Standard designation number
 - 6. NSF-61 mark verifying suitability for potable water service
 - 7. Extrusion production record code
 - 8. Trademark or trade name
 - 9. Cell Classification 12454 and/or PVC material code 1120 may also be included.
- G. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

2.2 ALTERNATE PIPE MATERIAL

- A. PVC Certain Teed Certa-Lok: PVC Certa-Lok C900/RJ (CI) SDR rated pipe (as manufactured by Certain Teed). The pipe shall have the following rating:
 - 1. 3-inch FPVC DR 14 Cl. 200 = 3-inch PVC Certa-Lok C900/RJ SDR 17 Cl. 250
- B.

2.3 FUSION JOINTS

- A. Unless otherwise specified, fusible polyvinylchloride pipe lengths shall be assembled in the field with butt fused joints. The Contractor shall follow the pipe supplier's written instructions for this procedure. Joint strength shall be equal to the pipe as demonstrated by testing requirements. All fusion joints shall be completed as described in this specification.

2.4 CONNECTIONS AND FITTINGS FOR PRESSURE APPLICATIONS

- A. Connections shall be defined in conjunction with the linking of project piping, as well as the tie-ins to other piping systems.
- B. DUCTILE IRON MECHANICAL FITTINGS – Acceptable fittings for use with fusible polyvinylchloride pipe shall include standard ductile iron fittings conforming to AWWA/ANSI C110/A21.10 and AWWA/ANSI C111/A21.11.
 - 1. Restrained connections to fusible polyvinylchloride pipe may be made using a restrained retainer gland product for DIPS or IPS sizing, as well as for MJ or flanged fittings. Example manufacturers include:
 - a. EBAA Iron – Megalug Series 2000PV, 2000SV, 2100, or Series 2200
 - b. Smith-Blair – Cam-Lok, 111/120 series
 - c. or approved equal.
 - 2. Bends, tees and other ductile iron fittings shall be restrained with the use of thrust blocking as indicated on the drawings.
 - 3. Ductile iron fittings and retainer glands must be installed per the manufacturer’s recommendations.
- C. PVC GASKETED, PUSH-ON FITTINGS – Acceptable fittings for use with fusible polyvinylchloride pipe shall include standard PVC pressure fittings conforming to AWWA C900 and AWWA C905.
 - 1. Acceptable fittings for use joining fusible polyvinylchloride pipe other sections of fusible polyvinylchloride pipe or other sections of PVC pipe shall include gasketed PVC, push-on type couplings and fittings, including bends, tees, and couplings as shown in the drawings.
 - 2. Bends, tees and other PVC fittings shall be restrained with the use of thrust blocking as indicated on the drawings.
 - 3. PVC gasketed, push-on fittings and mechanical restraints, if used, must be installed per the manufacturer’s recommendations.
- D. SLEEVE TYPE COUPLINGS
 - 1. Sleeve type mechanical couplings shall be manufactured for use with PVC pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.
 - 2. Acceptable sleeve-type mechanical pipe couplings shall include for unrestrained coupling:
 - a. Smith-Blair Omni-Coupling
 - b. Dresser Style 253 or Long Style 253
 - c. Hymax Long Body, pipes over 12 inch diameter
 - d. Romac Industries, Inc.,- Macro HP, two bolt extended range coupling, pipes up to we inch diameter
 - e. or approved equal.
 - 3. Acceptable sleeve type mechanical pipe couplings shall include for restrained coupling EBAA Iron Series 3800 or approved equal.
- E. EXPANSION AND FLEXIBLE COUPLINGS
 - 1. Expansion type mechanical couplings shall be manufactured for use with PVC pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.
 - 2. Acceptable expansion type mechanical pipe couplings shall include EBAA Iron EX-TEND 200, Smith-Blair Type-611 or Type-612, or approved equal.
 - 3. Acceptable flexible couplings shall include EBAA Iron FLEX-TEND or approved equal.
- F. CONNECTION HARDWARE
 - 1. Bolts and nuts for buried service shall be made of noncorrosive, high strength, low alloy steel having the characteristics specified in ANSI/AWWA C111/A21.11, regardless of any other protective coating.

2.5 CONNECTIONS FOR GRAVITY SANITARY SEWER APPLICATIONS

- A. The following connections are to be used in conjunction with tie-ins to other gravity sewer piping and structures, and shall be as indicated on the drawings.
- B. PVC GASKETED, PUSH-ON COUPLINGS
 - 1. Acceptable couplings for joining fusible polyvinylchloride pipe to other sections of fusible polyvinylchloride pipe or other sections of PVC pipe shall include gasketed PVC, push-on type couplings as shown in the drawings.
 - 2. PVC gasketed, push-on fittings and/or retainer glands must be installed per the manufacturer's recommendations.
- C. SLEEVE TYPE COUPLINGS:
 - 1. Sleeve type mechanical couplings shall be manufactured for use with PVC pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.
 - 2. Acceptable sleeve type mechanical pipe couplings shall include for unrestrained coupling Smith-Blair Omni-Coupling, Dresser Style 253 or Long Style 253, Hymax Long Body - pipes over 12 inch diameter, Romac industries, Inc., Macro HP – two bolt extended range couplings, pipes up to 12 inch diameter; or approved equal.
 - 3. Acceptable sleeve type mechanical pipe couplings shall include for restrained coupling, EBAA Iron Series 3800 or approved equal.
- D. EXPANSION AND FLEXIBLE COUPLINGS
 - 1. Expansion type mechanical couplings shall be manufactured for use with PVC pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.
 - 2. Acceptable expansion type mechanical pipe couplings shall include EBAA Iron EX-TEND 200, Smith-Blair Type-611 or Type-612, or approved equal.
 - 3. Acceptable flexible couplings shall include EBAA Iron FLEX-TEND or approved equal.
- E. CONNECTION HARDWARE
 - 1. Bolts and nuts for buried service shall be made of non-corrosive high strength, low alloy steel having the characteristics specified in ANSI/AWWA C111/A21, regardless of any other protective coating.
- F. CONNECTION TO SANITARY SEWER MANHOLES AND STRUCTURES
 - 1. Fusible polyvinylchloride pipe shall be connected to manholes and other structures to provide a leak free, properly graded flow into or out of the manhole or structure.
 - 2. Connections to existing manholes and structures shall be as specified and shown on the drawings.
 - a. For a cored or drilled opening provide a flexible, watertight connection that meets and/or exceeds ASTM C923.
 - b. For a knock out opening, provide a watertight connection (waterstop or other method) meeting the material requirements of ASTM C923 that is securely attached to the pipe with stainless steel bands or other means.
 - c. Grout opening in manhole wall with non-shrink grout. Pour concrete collar around pipe and outside manhole opening. Provide flexible pipe joint or flexible connector within 2 feet of collar.
 - 3. Connections to a new manhole or structure shall be as specified and shown on the drawings.
 - a. A flexible, watertight gasket per ASTM C 923 shall be cast integrally with riser section(s) for all precast manhole and

- structures.
- b. Drop connections shall be required where shown on drawings.
- c. Grout internal joint space with non-shrink grout.

2.6 DRILLING SYSTEM EQUIPMENT

A. GENERAL

1. The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore(s) and pullback of the pipe(s), a drilling fluid mixing and delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations, and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. All required equipment shall be included per the emergency and contingency plan as submitted per these specifications.

B. DRILLING RIG

1. The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull drill pipe while delivering a pressurized fluid mixture to a steerable drill head. The machine shall be anchored to withstand the pulling, pushing and rotating forces required to complete the project.
2. The drilling rig hydraulic system shall be self contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks.
3. The drilling rig shall have a system to monitor and record maximum pull back hydraulic pressure during pull back operations.

C. DRILL HEAD

1. The horizontal directional drilling equipment shall produce a stable fluid lined tunnel with the use of a steerable drill head.
2. The system must be able to control the depth and direction of the pipe.
3. Drill head shall contain all necessary cutters and fluid jets for the operation, and shall be of the appropriate design for the medium being drilled.

D. DRILLING FLUID SYSTEM

1. DRILLING FLUID (MUD)

- a. Drilling fluid shall be composed of clean water and the appropriate additive(s) for the fluid to be used. Water shall be from a clean source and shall meet the mixing requirements of the manufacturer.
- b. The water and additives shall be mixed thoroughly to assure the absence of any clumps or clods. No hazardous additives may be used.
- c. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall(s).
- d. Drilling fluid shall be disposed of off site in accordance with local, state and federal requirements and/or permit conditions.
- e. No additional chemicals or polymer surfactants shall be allowed to be added to the drilling fluid as submitted for this project without written consent of the Owner and/or Owner's Representative.

2. MIXING SYSTEM

- a. A self contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid for the project.
- b. The mixing system shall be able to ensure thorough mixing of the drilling fluid. The drilling fluid reservoir tank shall be sized for

- adequate storage of the fluid.
 - c. The mixing system shall continually agitate the drilling fluid during drilling operations.
 - 3. **DRILLING FLUID DELIVERY AND RECOVERY SYSTEM**
 - a. The drilling fluid pumping system shall have a minimum capacity to supply drilling fluid in accordance with the drilling equipment pull back rating at a constant required pressure.
 - b. The delivery system shall have filters or other appropriate in-line equipment to prevent solids from being pumped into the drill pipe.
 - c. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. The use of spill containment measures shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps, vacuum truck(s), and/or storage of sufficient size shall be in place to contain excess drilling fluid.
 - d. A closed loop drilling fluid system and a drilling fluid cleaning system should be used to whatever extent practical, depending upon project size and conditions. Under no circumstances shall drilling fluid that has escaped containment be reused in the drilling system.
- E. **PIPE PULL HEADS**
 - 1. Pipe pulls heads shall be utilized that employ a positive through bolt design assuring a smooth wall against the pipe cross section at all times.
 - 2. Pipe pull heads shall be specifically designed for use with fusible polyvinylchloride pipe, and shall be as recommended by the pipe supplier.
- F. **DRILLING CONTROL SYSTEM**
 - 1. Calibration of the electronic detection and control system shall be verified prior to the start of the bore.
 - 2. The drilling head shall be remotely steerable by means of an electronic or magnetic detection system. The drilling head location shall be monitored in three dimensions:
 - a. Offset from the baseline
 - b. Distance along the baseline
 - c. Depth of cover
 - 3. Point of rotation of the head shall also be monitored.
 - 4. For gravity application and on grade drilling, sonde/beacon or approved equipment applicable for grade increments of 1/10th of one percent shall be used.

PART 3 EXECUTION

3.1 DELIVERY AND OFF LOADING

- A. All pipes shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the Owner or Owner's Representative.
- B. Each pipe shipment should be inspected prior to unloading to see if the load has shifted or otherwise been damaged. Notify Owner or Owner's Representative immediately if more than immaterial damage is found.
- C. Each pipe shipment should be checked for quantity and proper pipe size, color and type.

- D. Pipe should be loaded, off loaded, and otherwise handled in accordance with AWWA M23.
- E. A forklift with chisel forks shall be used to off load the pipe. The fork chisel should be checked to be sure it is not thicker than the gap between the units of pipe strapped together for shipping and handling purposes. Extend forks to remove each top unit from the truck. When unloading 20 foot lengths, remove back units first. Do not run forks too far under the units, as fork ends striking adjacent units may cause damage. Insure that the forks are fully engaged. The 30 foot and 40 foot lengths are shipped in single length units. Because these are longer, the packages will flex or bend more than the 20 foot length units. If left bundled in units, unloading can be done with a single forklift so long as it is of sufficient capacity to handle the load. If sag exceeds recommendation (see the table below as to allowable sag), then each piece of pipe should be unloaded individually. The forks should be placed as far apart as possible to provide support to the unit. When unloading individual pieces of pipe, the pipe should be supported at approximately the 1/3 point measured from each end of the pipe.

Sag in Pipe Lengths during Unloading and Moving

Nom. Pipe Size	Segment		Height (SAG)
	30 foot Length	40 foot Length	
(DIPS)	(inches)	(inches)	
4	13	23 1/2	
6	9	16 1/2	
8	7	12 1/2	
10	5 1/2	10	
12	4 1/2	8 1/2	
14	4	7 1/2	
16	3 1/2	6 1/2	
18	3	5 1/2	
20	2 1/2	5	
24	2 1/2	4	
30	2	3 1/2	
36	1 1/2	3	
42	1	2 1/2	
48	1	2	
Nom. Pipe Size	Segment		Height (SAG)
	30 foot Length	40 foot Length	
(IPS)	(inches)	(inches)	
3	18	32 1/2	
4	14	25 1/2	
6	9 1/2	17	
8	7 1/2	13	
10	6	10 1/2	
12	5	9	
14	4 1/2	8	
16	4	7	

18	3 1/2	6
20	3	5 1/2
24	2 1/2	4 1/2
30	2	3 1/2
36	1 1/2	3
42	1 1/2	2 1/2
48	1	2

- F. Sag is the measurement of the pipe ends relative to the pipe center. With a pipe raised on the forklift, a string line can be pulled from the bottom of one end of the pipe to the bottom of the other end of the pipe. The distance in the center from the string to the bottom of the pipe is the sag.
- G. If a forklift is not available, a spreader bar with fabric straps capable of handling the load should be used. Recommended lift points when using fabric slings are at the point approximately 1/3 of the length measured from each end of the unit.
- H. Off loading devices such as chains, wire rope, chokers, or other pipe handling implements that may scratch, nick, cut, or gouge the pipe are strictly prohibited.
- I. During removal and handling, be sure that the pipe does not strike anything. Significant impact could cause damage, particularly during cold weather.
- J. If appropriate unloading equipment is not available, pipe may be unloaded by removing individual pieces. Care should be taken to insure that pipe is not dropped or damaged.
- K. Pipe should be carefully lowered, not dropped, from trucks.
- L. In preparation for pipe installation, placement of pipe should be as close to the fusion area as practical.

3.2 HANDLING AND STORAGE

- A. Any length of pipe showing a crack or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damage may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of pipe shall be determined by the Owner or Owner's Representative.
- B. Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the Owner or Owner's Representative.
- C. Pipe lengths should be stored and placed on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the ends of the pipe. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
- D. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way. Use of hooks, chains, wire rope or any other handling device which creates the opportunity to damage the surface of the pipe is strictly prohibited.
- E. After delivery to the project site, fusible polyvinylchloride pipe shall be stored at ambient temperature and protected from ultraviolet light degradation. If pipe is to be stored for periods of 6 months or longer, the pipe must be shaded or

otherwise shielded from direct sunlight. Covering of the pipe which allows for temperature buildup is strictly prohibited. Pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excess heat accumulation.

- F. Racks or dunnage to prevent damage to the bottom of the pipe during storage should support the pipe lengths. Supports should be spaced to prevent pipe bending and deformation. The pipe shall be stored in stacks no higher than that given in the following table:

<u>Pipe Diameter (inches)</u>	<u>Max. No. of Rows Stacked</u>
8 or less	5
12 to 21	4
24 to 30	3
33 to 48	2

3.3 FUSION PROCESS

A. GENERAL

1. Fusible polyvinylchloride pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's recommendations.
2. Fusible polyvinylchloride pipe will be fused by qualified fusion technicians, as documented by the pipe supplier. Training records for qualified fusion technicians shall be available to Owner or Owner's Representative upon request.
3. Each joint fusion shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this specification.
4. The fusible polyvinylchloride pipe will be installed in a manner so as not to exceed the recommended bending radius.
5. Where fusible polyvinylchloride pipe is installed by pulling in tension, the recommended Safe Pulling Force, according to the pipe supplier, will not be exceeded.
6. Only appropriately sized, and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following properties, including the following elements:
 - a. **HEAT PLATE** – Heat plates shall be in good condition with no deep gouges or scratches within the pipe circle being fused. Plates shall be clean and free of any contamination. Heater controls shall properly function, and cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's recommendations.
 - b. **CARRIAGE** – Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
 - c. **GENERAL MACHINE** – Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - d. **DATALOGGER** – The current version of the pipe supplier's recommended and compatible software shall be used. Protective

case shall be utilized for the hand held wireless portion of the unit. Datalogger operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.

7. Other equipment specifically required for the fusion process shall include the following:
 - a. Pipe rollers shall be used for support of pipe to either side of the machine.
 - b. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement and/or windy weather.
 - c. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 - d. Facing blades specifically designed for cutting fusible polyvinylchloride pipe.

B. JOINT RECORDING

1. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of thermoplastic pipe. The software shall register and/or record the parameters required by the manufacturer and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

3.4 DRILLING OPERATIONS

A. GENERAL

1. Grades, radii, and alignment of the proposed HDD installation are presented in the drawings for reference and intended bore path. The path of the bore may be modified based on field and equipment conditions. Entry and exit locations and control point elevations shall be maintained as shown on the drawings and specified, unless otherwise approved by the Owner or Owner's Representative.
2. Bend radii shown on the drawings are minimum allowable radii and shall not be reduced. Control point elevations shown on the drawings are minimum allowable cover and/or separation and shall not be reduced.

B. LOCATION AND PROTECTION OF UNDERGROUND UTILITIES

1. Correct location of all underground utilities that may impact the HDD installation is the responsibility of the Contractor, regardless of any locations shown on the drawings or previous survey completed by the Owner's Representative and/or Owner.
2. Utility location and notification services shall be contacted by the Contractor prior to the start of construction.
3. All existing lines and underground utilities shall be positively identified, including exposing those facilities that are located within an envelope of possible impact of HDD installation as determined for the project specific site conditions. It is the Contractor and HDD system operator's responsibility to determine this envelope of safe offset from existing utilities. This will include, but is not limited to, soil conditions and layering, utility proximity and material, HDD system and equipment, and foreign subsurface material.
4. The Contractor shall pot hole and locate all existing lines and underground utilities. The Contractor shall fill and compact all pot holes and return the surface to its original grade and surface material. All pot holes in pavement areas will be patched with High Early Concrete with

the concrete to be 8 inches in depth, minimum. This work shall be incidental to the Horizontal Directional Drilling installation.

C. SITE LOCATION PREPARATION

1. Work site as indicated on drawings shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made.
2. Contractor shall confine all activities to designated work areas.

D. DRILLING LAYOUT AND TOLERANCES

1. The drill path shall be accurately surveyed with entry and exit areas placed in the appropriate locations within the areas indicated on drawings. If using a magnetic guidance system, drill path will be surveyed for any surface geomagnetic variations or anomalies.
2. Instrumentation shall be provided and maintained at all times that accurately locates the pilot hole, measures drill string axial and torsional loads and measures drilling fluid discharge rate and pressure.
3. Entry and exit areas shall be drilled so as not to exceed the bending limitations of the pipe as recommended by the manufacturer.

E. PILOT HOLE BORE

1. Pilot hole shall be drilled along bore path. In the event that the pilot bore does deviate from the bore path, Contractor shall notify Owner and Owner's Representative and the Owner and/or Owner's Representative may require Contractor to pull back and redrill from the location along bore path before the deviation.
2. The Contractor shall limit curvature in any direction to reduce force on the pipe during pullback. Ideally, the directional bore should lie in a vertical plane. The minimum radius of curvature shall be no less than that specified by the pipe manufacturer and as indicated on the drawings.
3. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling and contact the Owner and Owner's Representative.
4. Owner and/or Owner's Representative shall approve the pilot hole bore alignment prior to back reaming phase and pipe installation.

F. REAMING

1. After successfully completing the pilot hole, the bore hole shall be reamed to a diameter which meets all local jurisdictional standards and the following table as a minimum:

Nominal Pipe Diameter	Bore Hole Diameter
< 8 inches	Pipe Dia. + 4 inches
8 inches to 24 inches	Pipe Dia. x 1.5
> 24 inches	Pipe Dia. + 12 inches

2. Multiple reaming passes shall be used at the discretion of the Contractor and shall conform to these specifications.
3. A swivel shall be used between the reaming head and the fusible polyvinylchloride pipe to minimize torsion stress on the assembly.
4. In the event of a drilling fluid fracture, returns loss or other loss of drilling fluid, the Contractor shall be responsible for restoring any damaged property to original condition and cleaning up the area in the vicinity of the damage or loss. Contractor shall immediately inform the Owner and Owner's Representative.

3.5 PIPE PULL BACK AND INSERTION

- A. Pipe shall be fused prior to insertion, if the site and conditions allow, into one continuous length.

- B. Contractor shall handle the pipe in a manner that will not over stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not over deflect, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
- C. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
 - 1. The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.
 - 2. The fusible polyvinylchloride pipe may be continuously or partially supported on rollers or other Owner and Owner's Representative approved friction decreasing implement during joining and insertion, as long as the pipe is not over stressed or critically abraded prior to, or during installation.
- D. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's recommendations. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.
- E. Once pullback operations have commenced, the operation shall continue without interruption until the pipe is completely pulled through the bore hole. Except for drill rod removal, pull back operation shall not cease until the pipe has been completely installed to final position. During the pull back operations, excessive pull back force shall be reported to Owner and Owner's Representative.
- F. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any damages caused by the Contractor's operations shall be corrected by the Contractor at no cost to the Owner.
- G. The Contractor shall provide vent holes along the boring route. The number of vents will depend upon the Contractor's construction operation. The Contractor shall fill and compact all vent holes and return the surface to its original grade and surface material. All vent holes in pavement areas will be patched with High Early Concrete with the concrete to be 8 inches in depth, minimum. This work shall be incidental to the Horizontal Directional Drilling installation.
- H. See Section 33 7910 - Tracer Wire for Tracer Wire Requirements.

3.6 PREPARATION PRIOR TO MAKING CONNECTIONS INTO EXISTING PIPING SYSTEMS

- A. Approximate locations for existing piping systems are shown on the drawings or detailed in the specifications. Prior to making connections into existing piping systems, the Contractor shall:
 - 1. Field verify location, size, piping material and piping system of the existing pipe.
 - 2. Obtain all required existing piping manufacturer(s) approved fittings (i.e., saddles, sleeve type couplings, flanges, tees, etc., as shown).
 - 3. Have installed all temporary pumps and/or pipes in accordance with established connection plans.
 - 4. Have on hand necessary pipe stoppers, pancake flanges or other items which may be necessary should an existing valve or appurtenance fail to seal properly.
- B. Unless otherwise approved by the Owner's Representative, new piping systems shall be completely assembled and successfully tested prior to making connections into existing pipe systems.

3.7 PIPE SYSTEM CONNECTIONS

- A. Pipe connections shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations and as indicated on the drawings. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations.

3.8 TAPPING FOR POTABLE AND NON-POTABLE WATER APPLICATIONS

- A. Tapping shall be performed using standard tapping saddles designed for use on PVC piping in accordance with AWWA C605. Tapping shall be performed only with use of tap saddles or sleeves. NO DIRECT TAPPING WILL BE PERMITTED. Tapping shall be performed in accordance with the applicable sections for Saddle Tapping per Uni-Pub-8.
- B. Tapping sizes shall be limited to the following maximum diameters for the nominal pipe diameters as indicated below:
 - 1. Nominal pipe diameters 14 inch and under in size shall be limited to a maximum tapping diameter of 1 inch.
 - 2. Nominal pipe diameters 16 inch - 18 inch in size shall be limited to a maximum tapping diameter of 2 inch.
 - 3. Nominal pipe diameters 20 inch- 24 inch in size shall be limited to a maximum tapping diameter of 4 inch.
 - 4. Nominal pipe diameters 30 inch and larger in size shall be limited to a maximum tapping diameter of 6 inch.
- C. All other connections requiring a larger diameter shall be made with a pipe connection as specified and indicated on the drawings.
- D. Equipment used for tapping shall be made specifically for tapping PVC pipe:
 - 1. Tapping bits shall be slotted "shell" style cutters, specifically made for PVC pipe. 'Hole saws' made for cutting wood, steel, ductile iron, or other materials are strictly prohibited.
 - 2. Manually operated or power operated drilling machines may be used.
- E. Taps may be performed while the pipeline is filled with water and under pressure ('wet' tap), or when the pipeline is not filled with water and not under pressure ('dry' tap).

3.9 INSTALLATION ACCEPTANCE AND CLEANUP

- A. If the final grade of the finished installation is not satisfactory to the Owner, Owner's Representative or other jurisdictional entity, the pipe shall be abandoned, full pressure grouted in place in accordance with the jurisdictional authority, and an alternate installation shall be made. The abandoned pipe shall be properly shown on as-recorded drawings to be submitted following conclusion of the construction work.
- B. The Owner's Representative shall inspect the installed pipe ends for roundness and/or damage. Evidence of significant surface scratching shall be brought to the attention of the Owner's Representative. Gouges or excessive surface damage of more than 10 percent of the wall thickness may be grounds to abandon the bore and have the Contractor redrill another line at no additional cost to the Owner.
- C. Following the installation, the project site shall be returned to a condition equal to or better than the preconstruction condition of the site. All excavations will be backfilled and compacted to 95% maximum density. All pavement and hardscape shall be repaired per applicable jurisdictional standards, excess materials shall be removed from the site, and disturbed areas shall be relandscaped. All drilling fluid shall be properly disposed of.

3.10 TESTING

- A. Testing shall comply with all local building codes, statutes, standards, local jurisdiction, and laws.
- B. HYDROSTATIC TESTING AND LEAKAGE TESTING FOR PRESSURE PIPING
1. Hydrostatic and leakage testing shall comply with AWWA C605.
 2. Hydrostatically test all pressure pipe in the presence of Owner's Representative at a minimum pressure of 150 psi for a period of no less than 3 hours. Determine allowable leakage per hour by the following equation:
$$L = \frac{ND P^{1/2}}{7,400}$$
where:
L = allowable leakage (gals/hr.)
N = number of pipe joints
D = pipe diameter in inches (in)
P = average test pressure (psi)
 3. If hydrostatic testing and leakage testing are performed at separate times, follow procedures as outlined in AWWA C605.
 4. In preparation for pressure testing the following parameters must be followed:
 - a. All air must be vented from the pipeline prior to pressurization. This may be accomplished with the use of the air relief valves or corporation stop valves, vent piping in the testing hardware or end caps, or any other method which adequately allows air to escape the pipeline at all high points. Venting may also be accomplished by 'flushing' the pipeline in accordance with the parameters and procedures as described in AWWA C605.
 - b. The pipeline must be fully restrained prior to pressurization. This includes complete installation of all mechanical restraints per the manufacturer's instructions and recommendations, whether permanent or temporary to the final installation. This also includes the installation and curing of any and all required thrust blocking. All appurtenances included in the pressure test, including valves, blow offs, and air relief valves shall be checked for proper installation and restraint prior to the beginning of the test.
 - c. Temporary pipeline alignments that are being tested, such as those that are partially installed in their permanent location shall be configured to minimize the amount of potentially trapped air in the pipeline.
 5. Obtain Owner's Representative's approval of testing equipment. Equipment, as a minimum must consist of a volumetrically calibrated water tank with cover, oil filled pressure gage graduated in feet of water or psi, flexible hoses, leak free valves and gas driven pump with capability to develop 200 psi of discharge pressure.
 6. If leakage is greater than allowable, take immediate action to correct the problem(s) and retest the section until leakage limits are met.
 7. If a new section of pipe is connected to an existing main or to a service connection, take appropriate action to prevent damage to the existing main. This may include temporary capping and blocking and leaving trench open for visual leakage inspection by Owner's Representative.
- C. LEAKAGE TESTING FOR NON-PRESSURE PIPING
1. Gravity sanitary sewers shall be tested for excessive leakage. This may include appropriate water or low pressure air testing. The leakage outward or inward (exfiltration or infiltration) shall not exceed 25 gallons

per inch of pipe diameter per mile per day for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of 2 feet. The air test, if used, shall be conducted in accordance with one of the following Standards:

- a. ASTM F1417
 - b. UNI-B-6
2. The testing method selected shall properly consider the existing groundwater elevations during the test. If the test section fails the test for excessive leakage, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.
- D. DEFLECTION TESTING FOR NON-PRESSURE PIPING
1. After completion of the backfill, the Owner's Representative or Owner may require that a deflection test be performed. If the test section fails the test for excessive deflection, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.
 2. Deflection tests should be conducted using a go/no-go mandrel. The mandrel's outside dimension shall be sized to permit no more than 7.5 percent deflection. The percent deflection shall be established from the base inside diameter of the pipe. If the internal beading of the joints for the pipe is not required to be removed, the mandrel shall account for this clearance as well. The mandrel shall be approved by the Owner or Owner's Representative prior to use. Lines that permit safe entry may allow other deflection test options, such as direct measurements with extension rulers.
- E. DISINFECTION OF THE PIPELINE FOR POTABLE WATER PIPING
1. After installation, the pipeline, having passed all required testing, shall be disinfected prior to being put into service. Unless otherwise directed by the Owner or Owner's Representative, the pipeline will be disinfected per AWWA C651.
- F. PARTIAL TESTING
1. Segments of the pipe may be tested separately in accordance with standard testing procedure, as approved by the Owner and Owner's Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measure fusible polyvinylchloride pipe by the linear foot (LF) of pipe as required, installed and accepted by the Owner's Representative. Extend measurement along the center line of the pipe.
- B. The fusion of the pipe, the fusion of equipment, preparation, handling and storage shall all be incidental to the fusible polyvinylchloride pipe.
- C. Measure fittings by the pound, using standard, manufacturer listed weights for the actual size and type of fitting installed and accepted by the Owner's Representative. Flanged and mechanical joint fittings will include all bolts, gaskets and accessories.
- D. Bedding, thrust blocking, lubricant, trimming and any other miscellaneous items or special requirements shall be incidental to the pipe or fittings and will not be measured.

4.2 PAYMENT

- A. Payment for fusible polyvinylchloride pipe installed by trenching shall be paid as per the item of work listed on the bid form for trenching for the actual length

approved by the Owner's Representative. Payment includes all trenching excavation, fusing of pipe, fusion equipment, installation of pipe in trench, bedding materials, backfilling, compacting, water for compacting and the additional items listed herein.

- B. Payment for fusible polyvinylchloride pipe installed by horizontal directional drill (HDD) shall be paid as per the item of work listed on the bid form for HDD and the actual length approved by the Owner's Representative. Payment includes excavating of bore holes, fusing of the pipe, fusion equipment, boring equipment, installation of the pipe, water and lubricant, backfilling and compacting of bore pits, removal of drilling fluid, clean up and the additional items listed herein.
- C. Payment for hydrostatic testing, disinfection, testing and flushing shall be incidental to the pipe installed.
- D. If specific items of required work are not as listed on the bid form, payment will be incidental to other, related, items of work.

END OF SECTION

SECTION 33 1416
SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe valves.
- B. Fire hydrants.
- C. Pipe and fittings for site water lines including domestic water lines and fire water lines.
- D. Valves.
- E. Hydrostatic pressure testing.

1.2 REFERENCE STANDARDS

- A. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.
- B. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- C. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.
- D. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2020.
- E. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2015.
- F. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter; 2022.
- G. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals; 2019.
- H. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile Iron Pipe and Fittings; 2022.
- I. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2018.
- J. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings; 2012.
- K. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2023.
- L. AWWA C153/A21.53 - Ductile-Iron Compact Fittings; 2011.
- M. AWWA C210 - Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings; 2015, with Addendum (2020).
- N. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2019.
- O. AWWA C502 - Dry-Barrel Fire Hydrants; 2018.
- P. AWWA C504 - Rubber-Seated Butterfly Valves; 2023.
- Q. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; 2023.
- R. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; 2009.
- S. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2013.
- T. AWWA C602 - Cement-Mortar Lining of Water Pipelines in Place - 4 In. (100 mm) and Larger; 2023.
- U. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings;

- 2013.
- V. AWWA C606 - Grooved and Shouldered Joints; 2022.
- W. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. through 60 In. (100 mm through 1500 mm); 2022.
- X. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 3/4 In. (19 mm) Through 3 In. (76 mm), for Water Service; 2020.
- Y. UL 246 - Hydrants for Fire-Protection Service; Current Edition, Including All Revisions.
- Z. Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers - Recommended Standards For Water Works; 2012.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Prior to shipping, provide data on pipe materials, pipe fittings, valves and accessories for review by Owner's Representative. Allow minimum of 7 working days for review and comment.
- C. Operation and Maintenance Data: Upon approval of submittals, furnish Owner's Representative with one PDF and one hard copy of Manufacturer's drawings and instructions included in the Operation and Maintenance Manual.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Manufacturer's instructions on handling, storage and installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver free of damage and store in protected area with labeling in place.
- B. Report any damage, including light surface scratches, to Owner's Representative prior to installation. Repair or replace any coating or component damage as required by Manufacturer and as directed by Owner's Representative.

1.6 REGULATORY REQUIREMENTS

- A. North Dakota Department of Environmental Quality, Municipal Facilities Division.
- B. Occupational Safety and Health Administration (OSHA).

PART 2 PRODUCTS

2.1 GENERAL

- A. All products or materials that may come into contact with water intended for use in a public water system shall meet the National Sanitary Foundation International (NSF)/American National Standards Institute (ANSI) Standard 61.
- B. The Contractor shall notify and obtain permission from the Fire Department having jurisdiction at least 24 hours prior to the shutting down service to any hydrant, and shall notify the Fire Department when service is restored. The Contractor shall notify and coordinate shutting down any water lines with the municipality having jurisdiction.

2.2 WATER PIPE - 3 INCH AND LARGER:

- A. Polyvinyl Chloride Pipe: Polyvinyl Chloride Pipe, as manufactured by CertainTeed Pipe or approved equal, shall meet the requirements of AWWA C900 or C905, or the latest revision thereof, and shall be furnished in Cast Iron Pipe equivalent outside diameters with elastomeric joints. The pressure class of PVC pipe shall be PC235 with a DR 18 for pipe smaller than 16 inches and PC235 with a DR 18 for pipe 16 inches and larger. All water main fittings shall be ductile iron.
1. Ductile Iron Fittings: Ductile Iron fittings shall be manufactured by Harco, Trinity Valley, or approved equal, and shall have a working pressure of 350 pounds per square inch conforming with AWWA/ANSI C153/A21.53 or AWWA/ANSI C110/A21.10. All Ductile Iron fittings shall be cement mortar lined and contain an exterior bituminous seal conforming with AWWA/ANSI C104/A21.4. All fittings shall be mechanically restrained and have thrust blocking. Thrust blocking shall be of adequate size to prevent movement of pipe and appurtenances when under pressure. Minimum bearing area shall be 2 square feet.
 2. Push-on joints and mechanical joints shall be manufactured in accordance with AWWA/ANSI C111/A21.11.
 3. Mechanical Joint Bolt Requirements: All bolts for mechanical joint fittings, valves, and hydrants shall be stainless steel Grade 304.
 4. Restrained pipe joints shall be required where shown on the plans. Joint restraint systems shall be Mega Lug or approved equal.
 5. Pipe Couplers:
 - a. 12" & Smaller: Romac MACRO HP Extended Range Coupling, Hymax Coupling, or approved equal.
 - b. Larger than 12": HYMAX Long Body Coupling, or approved equal.

2.3 WATER PIPE - LESS THAN 3 INCH

- A. Manufacturers:
1. Pipe: Granse, Eagle Plastic or Yardley for polyethylene and Halstad or Reading for copper tubing, or approved equals.
 2. Service Connection:
 - a. Romac - Saddle Style 306 SS
 - b. Ford - Service Saddle, Style FS 303
 - c. Corporation Stop: Ball valve with AWWA tapered threads. No plug or key style corporation stops will be allowed.
 - 1) Mueller - Corporation Stop, Style H-15005N for IPS PE plastic pipes and Style H-15008N for copper tubing.
 - 2) Ford - Corporation Stop, Style FB-1001-X-NL for PE Pipe and FB-600-X-NL for copper tubing.
 - 3) McDonald - Corporation Stop, Style 4701B-33
- B. Materials:
1. Pipe: Polyethylene Pipe (PE): 250 psi working pressure (IPS), ASTM D2239 SIDR-7, manufactured from materials meeting the requirements of Type III, class "C" category 5-P34PE as defined in ASTM D1248.
 2. Copper Tubing: Type K meeting ASTM B88.
 3. Service Connection: Double bolt, stainless steel.

2.4 VALVES

- A. Gate Valves: Manufacturer's name and pressure rating marked on valve body.
1. The gate valve furnished shall be of a quality equal to that manufactured by American Flow Control under the minimum requirements in design, material, and workmanship conforming to the latest AWWA Standard C515. The metals used shall be in accordance with AWWA and ASTM

Standards. Unless otherwise designated, all gate valves shall have a non-rising stem, O-ring stem seals, 2-inch operating nuts, and open counterclockwise. If a stem extension is specified, it shall be fastened to the operating nut with a set screw. The operating nut shall be drilled or otherwise indented to accept the set screw and provide a secure connection that will prevent an extension from coming loose during operation. The gate valve shall have a resilient synthetic rubber coating seat attached to the wedge, manufactured and designed in accordance with the latest AWWA Standard C515. Resilient-Seated Gate Valve body and bonnet shall be coated, inside and out, with a fusion bonded epoxy in accordance with AWWA C550. The waterway shall have a full unobstructed flow without recesses in the bottom. All bonnet bolts shall be stainless steel.

- B. Valve Boxes: The valve boxes furnished shall be of a quality equal to that manufactured by Tyler Pipe Model 6860 or Star Pipe Products Cast Iron Heavy Duty Model "G" with bases and dimensions of each section to be as follows:
 - 1. No. 6 round base for 24-inch and smaller gate valves.
 - 2. Cover shall be marked "WATER".
 - 3. Top Section 25 1/2 inches long. Extension pieces as required.
 - 4. All valve boxes shall be capable of a minimum 6-inch top adjustment in either direction, up or down, to or from, the finished curb grades shown in the plans.
 - 5. If any valve box extension pieces are required to make the above-mentioned adjustment, they shall be considered incidental.

2.5 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 2323.
- B. Pipe Cover Material: As specified in Section 31 2323.

2.6 ACCESSORIES

- A. Ductile iron fittings and hydrants shall be braced against undisturbed earth by the use of poured concrete or concrete thrust blocks. Poured concrete shall be 3000 psi.
- B. Marking Tape: The Contractor will be required to furnish and install marking tape located 2 feet above the top of all water lines installed under this contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be blue in color with the words "CAUTION WATER LINE BELOW" imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Griffolyn Company, Inc. standard grade.
 - 1. The cost of marking tape and installation shall be considered incidental to the cost of the pipe.
- C. Polyethylene Encasements: All ductile iron and cast iron pipe, valves, valves boxes, fittings, couplings and hydrants shall be encased with 8-mil linear low-density (LLD) polyethylene film in accordance with ANSI/AWWA C105/A21.5.
- D. Markers: At each water stubout, Contractor shall furnish a 2-inch by 4-inch wood marker, extending a minimum of 2 feet above finish grade, painted blue.
- E. Contractor shall ensure installed potable waterlines are locatable by one of the following methods:
 - 1. Provide GPS coordinates with up to 0.5 m accuracy/tolerance at all installed water line fittings, valves, hydrants, and pipe dead ends.
 - a. Coordinates shall be on the same horizontal and vertical datum system as the contract documents.

- b. Coordinates shall be included on the Contractor's "As-Constructed" project record documents submittal.
2. Install tracer wire in accordance with Section 33 7910.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.
- D. Temporary Water Supply:
 1. The Contractor shall be responsible for maintaining water supplies. In the event that a shut-down is anticipated to last more than 4 hours, the Contractor shall provide temporary water supply to ensure continuous service to any impacted properties. The method and type of material used for such temporary water supply shall be approved by the Owner's Representative.
 2. The Contractor shall notify all affected properties no less than 24 hours prior to the interruption of service. Notification shall include contact information for the Contractor and Owner's Representative, a description of the work to be performed, and the intended period of interruption.
 3. The water piping of temporary hoses, piping, etc, shall be 160 psi rated, NSF approved hose, flexible polyethylene pipe, or PVC pipe.
 4. Temporary water system shall be sized to meet ordinary water needs of the consumers.
 5. Temporary water system shall be disinfected in accordance with Section 33 1300.

3.3 UTILITY CROSSINGS

- A. Separation between water and sanitary sewer piping shall be provided as follows:
 1. Provide a minimum horizontal separation of 10 feet measured from edge of water pipe to edge of sanitary sewer pipe.
 2. Provide a minimum vertical separation of 18 inches measured from edge of water pipe to edge of sanitary sewer pipe.
 3. At all crossings, both water pipe and sanitary sewer pipe shall be installed with a full pipe section centered over a full pipe section. Sewer joints shall be installed equidistant and as far as possible from water pipe joints. Where water pipe crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
 4. Minimum separation between water and sanitary sewer lines shall be 18 inches at all crossings, whether water is over or under sewer.
 5. If it is impossible to obtain proper horizontal and vertical separation as stipulated above, reviewing agency approval must be obtained on a case by case basis to utilize one of the following methods:
 - a. Sanitary sewer shall be designed and constructed to water pipe standards, and shall be pressure tested at 150 psi for a period of one hour to assure water tightness.
 - b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier

pipe shall be of materials specified for use in water main construction.

3.4 INSTALLATION - PIPE

- A. Establish elevations of buried piping to ensure not less than 8'-0" ft of cover to crown.
- B. Install pipe to indicated elevation to within tolerance of 5/8 inches.
- C. Route pipe in straight line. Joint deflections shall not exceed manufacturers recommendations.
- D. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- E. Install insulation where indicated on the plans.
- F. Slope water pipe and position hydrants at high points.
- G. Contractor shall ensure installed potable waterlines are locatable by one of the following methods:
 - 1. Provide GPS coordinates with up to 0.5 m accuracy/tolerance at all installed water line fittings, valves, hydrants, and pipe dead ends.
 - a. Coordinates shall be on the same horizontal and vertical datum system as the contract documents.
 - b. Coordinates shall be included on the Contractor's "As-Constructed" project record documents submittal.
 - 2. Install tracer wire in accordance with Section 33 7910.

3.5 INSTALLATION - WATER SERVICE LINES

- A. Ream pipe and tube ends, and remove burrs.
- B. Prepare pipe connections according to manufactureres recommendations and industry standards.
- C. Install pipe bedding and hand tamp.
- D. Establish elevations of buried piping to ensure not less than [7'-6"] ft ([2.3] m) of cover to crown.

3.6 INSTALLATION - VALVES

- A. Set valves on concrete block 6 inches thick and 12 inches square or larger.
- B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.7 INSTALLATION - CONNECTION TO EXISTING MAIN

- A. Prior to making any connection to an existing City water main, the Contractor shall coordinate with the municipality having jurisdiction, and shall either schedule the connection to be made by the municipality, or obtain permission to make the connection to the main. If the connection is to be made by the municipality, the Contractor shall be responsible for all work associated with installation of the tapping sleeve and valve, and for assisting the local municipality in positioning the tapping machine.
- B. Tapping sleeve with valves shall be hydrostatically pressure tested on the main prior to requesting a tap. The test shall be 125 pounds per square inch for a duration of 30 minutes.
- C. The tapping valve shall conform to the requirements of this specification for gate valves.
- D. For pipe sizes of 6 inches to 24 inches, the tapping sleeve shall be stainless steel with a stainless steel flange and bolts and shall conform to the "Smith Blair" Type 663 or "Romac" Type SST or an approved equal.
- E. All corporate taps made into all sizes and classes of asbestos cement, PVC, sandcast iron, cast iron, ductile iron, and prestressed concrete water mains shall

be reinforced with a tapping saddle.

- F. Tapping saddles shall be installed according to manufacturer's installation instructions.

3.8 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Perform field inspection and testing in accordance with Section 01 4000.
- C. Perform trench backfill testing in accordance with Section 31 2323.
- D. Hydrostatically test all pressure pipe in the presence of Owner's Representative at a minimum pressure of 150 psi for a period of no less than 2 hours as required by AWWA Section C600, with pipe section being tested to maintain pressure within 5 PSI of the specified hydrostatic test pressure.

- 1. Determine allowable leakage per hour by the following equation:

$$Q = LD(P^{0.5})/148,000$$

Where:

Q= quantity of makeup water, in gallons per hour

L= length of pipe section being tested, in feet

D= nominal diameter of the pipe, in inches

P= average test pressure during the hydrostatic test in pounds per square inch (gauge)

- 1. Remove all air prior to beginning of test.
- 2. Obtain Owner's Representative's approval of testing equipment. Equipment, at a minimum, must consist of a volumetrically calibrated water tank with cover, oil filled pressure gage graduated in feet of water or psi, flexible hoses, leak free valves and gas driven pump with capability to develop 200 psi of discharge pressure.
- 3. If leakage is greater than allowable, take immediate action to correct the problem(s) and retest the section until leakage limits are met.
- 4. If a new section of pipe is connected to an existing main or to a service connection, take appropriate action to prevent damage to the existing main. This may include temporary capping and blocking and leaving trench open for visual leakage inspection by Owner's Representative.
- 5. Flush in the presence of Owner's Representative to the approval of Owner's Representative immediately after completion of pressure test.
- 6. Flush away from existing mains or services.
- 7. Water for flushing furnished by the Owner.
- E. Trace Wire Electrical Conductivity Testing: All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the CONTRACTOR, OWNER'S REPRESENTATIVE and CITY prior to acceptance. Continuity testing in lieu of actual line tracing shall not be accepted.
 - 1. Conductivity testing shall be performed within one week of pressure testing completion.
- F. Perform disinfection and bacteriological testing in accordance with Section 33 0110.58.
- G. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.9 PROJECT RECORD DOCUMENTS

- A. Accurately record location of pipe runs, connections, and termination points on “as constructed” plans.
- B. Identify, describe and show approximate location of newly discovered utilities during excavation.
- C. Provide disinfection and bacteriological reports as required by Section 33 0110.58 - Disinfection of Water Utility Piping Systems.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.
- C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

- A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.
- B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 33 3113
SITE SANITARY SEWERAGE GRAVITY PIPING**

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2021.
- B. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.
- C. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.
- D. ASTM D2241 - 09 Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2015.
- E. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.
- F. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2023.
- G. ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals; 2007 (Reapproved 2013).
- H. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014.
- I. ASTM F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings; 2015.
- J. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials; 2021.
- K. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2023.

1.2 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories and fittings.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Project Record Documents:
 - 1. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
 - 3. Submit test results and documentation for all testing performed per the Field Quality Control portion of this specification.

1.3 REGULATORY REQUIREMENTS

- A. The materials, equipment, and construction methods employed for installation of all sanitary sewer piping, fitting, and accessories shall be in full compliance with the ordinances of the municipality in which the work will be performed, the Minnesota State Plumbing Code, regulations set forth by the Minnesota Department of Health, and in accordance with these specifications.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

- A. Sanitary Sewer Gravity Main: For pipes 15-inch and smaller, SDR 35 PVC conforming to ASTM D3034, with gasketed bell and spigot joints, gaskets conforming to ASTM F477. For pipes larger than 15 inches, PVC pipe conforming to ASTM F679. Solvent welded pipe shall not be allowed.
- B. Sanitary Sewer Gravity Service: SDR 26 PVC conforming to ASTM D3034, with gasketed bell and spigot joints, gaskets conforming to ASTM F477. Solvent welded pipe shall not be allowed.
- C. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tees, bends, elbows, cleanouts, reducers, traps and other configurations required. All sanitary sewer forcemain fittings shall be ductile iron.
- D. Connection to Existing Main: When connecting to a sewer main and a wye is not available, the connection shall be made using an Inserta Tee manufactured by Inserta Fittings Co., or an approved equal. A factory-assembled wye may be cut in using gasketed repair couplers.

2.2 PIPE ACCESSORIES

- A. Marking Tape: The Contractor will be required to furnish and install marking tape located 2 feet above the top of all sanitary sewer lines installed under this contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be green in color with the words "CAUTION SEWER LINE BELOW" imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Griffolyn Company, Inc. standard grade.
 - 1. The cost of marking tape and installation shall be considered incidental to the cost of the pipe.

2.3 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 2323.
- B. Pipe Cover Material: As specified in Section 31 2323.

PART 3 EXECUTION

3.1 TRENCHING

- A. See Section 31 2316.13 for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.2 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Pipe installed for future building connections shall be stubbed out, capped and buried as indicated on plans.
- E. Stubouts: For sanitary sewer stubouts indicated on plans, a 2-inch by 4-inch wood marker shall be placed a minimum of 1 foot from the end of the sewer stubout, shall extend vertically and plumb to not less than 2 feet above the existing surrounding ground, and shall be painted green.

- F. Connection to Existing Main: When connecting to a sewer main and a wye is not available, the connection shall be made using an Inserta Tee manufactured by Inserta Fittings Co., or an approved equal. A factory-assembled wye may be cut in using gasketed repair couplers.

3.3 TOLERANCES

- A. Install gravity sewer pipe to the following tolerances:
 - 1. Vertical: Plus or minus 0.03 feet
 - 2. Horizontal: Plus or minus 0.05 feet

3.4 UTILITY CROSSINGS

- A. Separation between water and sanitary sewer piping shall be provided as follows:
 - 1. Provide a minimum horizontal separation of 10 feet measured from edge of water pipe to edge of sanitary sewer pipe.
 - 2. Provide a minimum vertical separation of 18 inches measured from edge of water pipe to edge of sanitary sewer pipe.
 - 3. At all crossings, both water pipe and sanitary sewer pipe shall be installed with a full pipe section centered over a full pipe section. Sewer joints shall be installed equidistant and as far as possible from water pipe joints. Where water pipe crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
 - 4. Minimum separation between water and sanitary sewer lines shall be 18 inches at all crossings, whether water is over or under sewer.
 - 5. If it is impossible to obtain proper horizontal and vertical separation as stipulated above, reviewing agency approval must be obtained on a case by case basis to utilize one of the following methods:
 - a. Sanitary sewer shall be designed and constructed to water pipe standards, and shall be pressure tested at 150 psi for a period of one hour to assure water tightness.
 - b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials specified for use in water main construction.

3.5 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- C. Following completion of installation, flush pipe manholes and cleanouts. Remove all sediment and debris flushed from system and dispose of.
- D. Leakage Testing:
 - 1. All sanitary sewer lines shall be substantially watertight and shall be tested for excessive leakage upon completion, before connections are made by others. Each test section of the sewer shall be subjected to exfiltration testing, either by hydrostatic or air test method as described below and at the Contractor's option. The requirements set forth for maximum leakage shall be met as a condition for acceptance of the sewer section represented by the test.
 - 2. If the ground water level is greater than three feet above the invert elevation of the upper manhole and the Owner's Representative so approves, infiltration testing may be allowed in lieu of the exfiltration testing, in which case the allowable leakage shall be the same as would be allowed for the Hydrostatic Test.

3. All testing shall be performed by the Contractor without any direct compensation being made therefore, and the Contractor shall furnish all necessary equipment and materials, including plugs and standpipes as required.
4. **Hydrostatic Test Method:**
 - a. After bulkheading the test section, the pipe shall be subjected to a hydrostatic pressure produced by a head of water at a depth of three feet (3') above the invert elevation of the sewer at the upstream manhole of the test section. In areas where ground water exists, this head of water shall be three feet (3') above the existing water table.
 - b. The water head shall be maintained for a period of one (1) hour during which time it will be presumed that full absorption of the pipe body has taken place, and thereafter for an extended period of one (1) hour the water head shall be maintained as the test period. During the test period, the measured water loss within the test section, including service stubs, shall not exceed an infiltration/exfiltration rate of thirty five (35) gallons/inch-diameter/mile/day.
 - c. If measurements indicate exfiltration within a test section is not greater than the allowable maximum, the section will be accepted as passing the test.
5. **Air Test Method:**
 - a. Leakage testing by the Air Test Method shall be completed in accordance with ASTM F1417.
 - b. The sewer pipe section to be tested shall be clean at the time of testing, but the pipe may be wetted. Pneumatic balls shall be used to plug the pipe ends at manholes. Low- pressure air shall be introduced to the plugged line until the internal air pressure reaches three and one half (3.5) psi greater than the average backpressure of any ground water pressure that may submerge the pipe. At least two (2) minutes shall be allowed for the air temperature to stabilize before readings are taken and the timing started. During this time, the Contractor shall check all plugs to detect plug leakage. If plugs are found to leak, air shall be bled off, the plugs shall be retightened, and the air shall be reintroduced into the line.
 - c. The sewer section under test will be accepted as having passed the air leakage test when the rate of air loss as measured by pressure drop, does not exceed a specified amount in a specified time. Pressure drop may be determined by using the formula provided below.

FORMULA

The formula below calculates the specified minimum time required for a 1.00 psig pressure drop from a starting pressure of 3.5 psig to a final pressure of 2.5 psig using a leakage rate of 0.0015 cubic feet/minute/square foot of internal surface.

$$T = 0.085 DK/Q$$

where:

T = shortest time allowed for the air pressure to drop 1.0 psig, sec.

K = 0.000419 DL but not less than 1.0,

Q =leak rate= 0.0015 CFM/SF,

D =measured average inside diameter of sewer pipe, in., and

L = length of test section, ft.

- d. Tabulated values for the formula above may be provided upon request.

E. Circular Deflection Testing:

1. All mainline fittings and plastic or HDPE pipe 8 inches and larger shall be tested by the Contractor to ensure that circular deflections do not exceed the maximum allowable deflection. Maximum allowable deflections shall be governed by the mandrel requirements stated herein and shall nominally be 5 percent.
2. The maximum average inside diameter shall be equal to the average outside diameter per applicable ASTM Standards minus two minimum wall thicknesses per applicable ASTM Standards. Manufacturing and other tolerances shall not be considered for determining maximum allowable deflections.
3. Deflection tests shall be performed no sooner than 30 days after completion of the placement and compaction of the backfill. The pipe shall be clean and inspected for offsets and obstructions prior to testing.
4. The mandrel shall be a rigid, nonadjustable, 9-leg minimum mandrel having an effective length not less than its nominal diameter. It shall have a minimum diameter, at any point along the full length, equal to 95-percent of the average inside pipe diameter as specified by the applicable ASTM Standards. The mandrel shall be fabricated of steel and shall have pull rings at either end. The mandrel shall be stamped or engraved indicating the pipe material specification, nominal size and mandrel outside diameter. The maximum average inside diameter of the pipe shall be measured and calculated by the Owner's Representative in the field prior to installation.
5. The mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. Prior to use, the mandrel shall be certified by the Owner's Representative. If the mandrel fails to pass through the pipe, it will be deemed to be over-deflected.
6. Unless otherwise permitted by the Owner's Representative, any over-deflected pipe shall be uncovered and, if not damaged, removed and reinstalled. Damaged pipe shall be removed from the work site and replaced with new pipe.

3.6 PROJECT RECORD DOCUMENTS

- A. Accurately record location of pipe runs, wyes, service connections, and termination points on "as constructed" plans.
- B. Identify, describe and show approximate location of variations in subsoil conditions or the discovery of unknown utilities.
- C. Submit test results and documentation for all testing performed per the Field Quality Control portion of this specification.

3.7 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. If specific items are listed on bid form, measurement will be made in accordance with each specific bid item.
- B. For lump sum (LS) bid items, measurements will not be made.

C. Items indicated to be paid at plan quantity will not be measured.

4.2 PAYMENT

A. Payment for specific bid items shall be at the unit price bid and shall include all costs for labor, equipment, and materials.

B. If a bid item is not provided for any items, it shall be considered incidental to other work.

END OF SECTION

**SECTION 33 3120
PIPELINE CLEANING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. High pressure water jetting, rodding, bucketing, brushing and flushing of pipes and manholes.

1.2 PERFORMANCE REQUIREMENTS

- A. Provide necessary qualified personnel and equipment to clean the specified pipes and manholes.

1.3 SUBMITTALS

- A. Submit to Project Coordinator prior to or at the preconstruction meeting a schedule of work.
- B. Submit to Project Coordinator prior to or at the preconstruction meeting a written plan for traffic control, including detour routes and signage (if applicable).
- C. Follow requirements in Section 01 3000 - Administrative Requirements.

1.4 QUALIFICATIONS

- A. Perform cleaning with personnel trained in use of all equipment to adequately clean the sewer of all debris.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Dispose of all waste materials in an approved location.

PART 2 NOT APPLICABLE

PART 3 EXECUTION

3.1 PUBLIC NOTIFICATION

- A. Publish an article in local newspaper not more than 1 week prior to commencement stating the following information:
 - 1. Dates of project implementation.
 - 2. Reason for cleaning.
 - 3. If resident encounters odor problems, pour water down basement traps.
 - 4. Local phone number for Contractor.

3.2 PREPARATION

- A. Ensure traffic control devices including the necessary signage are on the project site.

3.3 PROCEDURE

- A. Equipment:
 - 1. Equipment used for sewer cleaning shall be capable of removing all dirt, grease, rocks, roots and other materials.
 - 2. Equipment shall be selected by the Contractor to prevent damage to the pipe.
 - 3. Cleaning equipment capable of cleaning lengths up to 1000 feet shall be provided.
 - 4. Equipment must be able to clean the 1000 foot length with vehicular access to one structure only. (Does not apply to bucket machines).
- B. Light Cleaning:
 - 1. Required where it has been determined through a visual inspection that only small deposits of debris exist within the sewer line.

2. Cleaning would require not more than three (3) slow passes through the line with high pressure, high volume jetting equipment.
- C. Heavy Cleaning:
1. If line is not clean after three (3) passes through the line with high pressure water jetting equipment, then heavy equipment may be used to facilitate the removal of such deposits.
 2. Bucket machines, scrapers, augers and jetting equipment may be utilized in this heavy duty cleaning.
 3. Where bucket machines and buckets are to be used, caution should be taken that proper sized flexible cable be used so that breakage will not occur. Contractor is responsible for all damage caused by bucketing lines.
- D. Waste Material:
1. Pipe shall be completely clear of any debris, roots, sand, deposits, grease, etc.
 2. Determine the extent and methods required to adequately clean the sewer.
 3. All sludge, dirt, sand, rocks, grease, roots and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream structure of the section being cleaned.
 4. Passing material past accessible structures, which can cause line stoppages, accumulations of sand in wet wells or damage to pumping equipment, shall not be permitted.
 5. Use of a vacuum truck in conjunction with cleaning operations may be required.
 6. All dirt, debris, roots and other material removed from the sewers shall be hauled away by the Contractor to a dumpsite approved by the Owner.
 7. Follow all regulations of the Environmental Protection Agency and all other regulating agencies.
 8. Cleaning shall be of the entire reach between structures.
 9. If cleaning of an entire section cannot be successfully performed from one structure, the equipment shall be set up on the other structure and cleaning again attempted without additional compensation.
 10. Removal and disposal of debris and clean-up related to this work shall also be incidental to this bid item.

3.4 SCHEDULING AND COORDINATION

- A. Contractor shall schedule and coordinate all cleaning activities with Owner and Owner's Representative.

3.5 CLEANING AND RESTORATION

- A. Remove all debris from manhole and surrounding area at conclusion of job.
- B. Return manhole lids to proper location.

3.6 PROJECT RECORD DOCUMENTS

- A. Note all severely deteriorated or damaged manholes, connections and associated appurtenances discovered during cleaning operation and report these to the Owner's Representative.
- B. Maintain a diary recording these discoveries and any other information that may be helpful to the owner in assessing system conditions.
- C. Provide Owner's Representative a typed diary or work log of all observations or discoveries identifying location of deteriorated or damaged manholes, connections and associated appurtenances.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measure cleaning of pipes by the linear foot (LF) as accepted by the Owner's Representative.
- B. Extend measurement from center of manhole/cleanout to center of manhole/cleanout.
- C. Manhole cleaning shall be incidental to the pipeline cleaning bid item.

4.2 PAYMENT

- A. Payment for cleaning shall be per linear foot (LF), paid when completed and diaries received.
- B. Heavy cleaning will be considered incidental to the cleaning bid item.

END OF SECTION

**SECTION 33 3125
PIPELINE TELEVISIONING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements for televising and reporting underground pipelines.

1.2 PERFORMANCE REQUIREMENTS

- A. Assure a complete examination of the internal condition of the pipeline utilizing a closed circuit color camera.
- B. Performance Requirements: All sanitary sewer mains installed or repaired under this project shall be televised by the Contractor. The Contractor shall be allowed to televise with the following requirement: A City representative and/or Owner's Representative shall be on site to view the televising. Then Contractor shall assure that the lines are free of debris prior to televising, i.e. no dirt, stone, gravel, or other foreign materials, other than joint lubricants, shall be present. Distance measurements shall be provided with the televising so that deficient locations and all wye locations may be found adequately. DVD's shall be produced, during televising showing, clean pipe walls, water flow (if any), joints, wyes, and distance, in tenths, from centerline of starting manhole to centerline of ending manhole of each televising run. Any portion of the system found not to be in compliance with these specifications shall be reconstructed in accordance with these specifications and re-televised at the Contractor's expense. The Contractor shall provide two copies of the televised tape to the Owner's Representative along with two copies of an accurate log showing distances along the televised run to any distresses and all wye locations. The Contractor shall allow adequate time for televising of the sanitary sewer lines prior to any undertaking of subgrade preparation over said sewer lines. Contractor to coordinate with the Owner's Representative and the City.

All deficiencies outside of allowed tolerance, within the plans and specifications, shall be repaired by the Contractor and all repair costs shall be born by the Contractor. Timeliness of repair, with respect to other work, shall be the responsibility of the Contractor. The Contractor shall ensure timeliness of televising and shall review subsequent tape to check for any deficiencies so they may be repaired in a timely manner with respect to construction operations. All repairs shall be agreed upon by the Owner's Representative, City and Contractor. Any cost to repair, including any street reconstruction, waterline repair, etc. shall be born by the Contractor.

1.3 SUBMITTALS

- A. Submit to Owner's Representative a schedule of work prior to or at the pre-construction meeting.
- B. Submit to Owner's Representative, prior to commencement of work, a written plan for traffic control including detour routes and signage (if applicable).
- C. Submit to Owner's Representative 2 copies of all DVD's and logs at project completion.
- D. Follow requirements in Section 01 3000 - Administrative Requirements.

1.4 QUALITY ASSURANCE

- A. DVD's label will indicate location, start and stop points and date.

- B. Any service connection, joint connection or defect discovered during video taping shall be viewed from all possible angles and directions to show any damage or repair required.
- C. Videos obscured by steam, water or other obstructions that do not allow Owner's Representative to observe the condition of the pipe shall be rejected and redone at Contractor's expense.

1.5 QUALIFICATIONS

- A. Televising of pipeline shall be performed by trained personnel to assure the best quality televising possible.
- B. A minimum of 2 years active experience televising pipelines shall be required of any Contractor bidding on this project.
- C. Pre-qualification to all perspective bidders shall include a listing of similar projects including type of project, date and contact.

PART 2 PRODUCTS

2.1 MATERIALS

- A. The Contractor shall utilize a software package system that is PACP compliant Version 4.2 in a digital format compatible with the Owner's equipment and technology.

PART 3 EXECUTION

3.1 PREPARATION

- A. Notify Owner's Representative in writing of any changes made in the traffic control plan.
- B. Notify Owner's Representative in writing of any changes in the schedule of work plan.

3.2 PROCEDURE

- A. Equipment
 - 1. Contractor shall furnish all labor, equipment and materials to perform the closed circuit television inspection of the pipelines.
 - 2. Operation of the equipment is to be controlled from above ground with a skilled technician at the control panel in the television studio, controlling the movement of the camera through the pipeline in either direction.
 - 3. Televising equipment shall include the camera, television monitor, cables, power source, lights and other equipment necessary to the televising operation.
 - 4. The importance of accurate distance measurements is emphasized. Accuracy of the measurement meter shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device. Footage measurements shall begin at the centerline of the upstream manhole and end at the centerline of the downstream manhole. Footage shall be shown on the video data view and recorded at all times.
- B. Roots, Mineral Deposits, and Protruding Taps
 - 1. Where obstructions within the pipeline prevent the passage of televising equipment, Contractor shall reset his equipment to pass through the pipeline section from the other end and thereby complete the inspection.
 - 2. Contractor will be required to remove any obstruction to complete televising of pipeline as directed by Owner's Representative.
- C. Camera
 - 1. Camera and lighting quality shall be suitable to provide a clear, continuously in focus picture of the entire inside periphery of the pipeline

- for all conditions encountered during the work.
2. Camera shall be able to operate efficiently in 100% humidity conditions.
 3. The minimum resolution of the video system shall be 650 lines of resolution color video picture.
 4. The color camera shall be one specifically designed and constructed for the purpose of televising pipelines.
 5. Color camera shall have a high resolution lens, rated at a minimum of 1.4 LUX, capable of spanning 360 degrees circumference and 270 degrees on horizontal axis to televise pipelines 6 inch diameter or larger.
 6. Focal distance shall be adjustable through a range of 1 inch to infinity.
 7. Contractor shall have available a self-propelled crawler transporter on which to mount the color camera so as to be able to inspect the pipeline as required.
 8. The video camera shall not be pulled at a speed greater than 30 feet per minute.
 9. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be setup between the two manholes of the section being inspected to insure good communication between the members of the crew.
- D. DVD's
1. The entire pipeline inspection shall be recorded on a narrated videotape that includes all findings.
 2. DVD's shall be high quality color and recorded in either a digital format compatible with the City's equipment and technology.
 3. Any out of focus video recordings, or portions thereof, shall be cause for rejection of the video recording and will necessitate retelevising at Contractor's expense.
 4. Televising shall be completed in a systematic fashion as approved by Owner's Representative.
 5. Provide on screen digital display, indicate distance travel down the pipe from beginning of run. Reset counter to zero at beginning.
 6. Visual (On screen in corner):
 - a. Report number.
 - b. Date of television inspection.
 - c. Sewer section and number.
 - d. Current distance along reach (tape counter footage).
 - e. Printed labels on DVD container and DVD with location information, date, format information, and other descriptive information.
 7. Audio:
 - a. Date and time of television inspection, operator name, name of overlying or adjacent street, and manhole numbers.
 - b. Verbal confirmation of sewer section and television direction in relation to direction of flow.
 - c. Verbal description of pipe size, type and pipe joint length.
 8. Verbal description and location of each service connection and pipe defect.
 - a. Type of weather during inspection.
- E. During the course of the inspection and as required by the Owner's Representative, actual video information will be transmitted from the television monitor to a video image printer to produce color still image photographs of faults.
- F. Video Logs

1. A report will be generated by an onboard computer and printer, and will provide commentary on photographs and fault areas if required by the Owner's Representative.
2. The video log reports shall be typed or computer generated.
3. Include the following information in the report:
 - a. Nearest street and cross street at starting point.
 - b. Starting manhole number, depth, and type.
 - c. Ending manhole number, depth and type.
 - d. Size and type of line being televised.
 - e. Footage of each defect or service found in the line.
 - f. Total length of the line measured from manhole to manhole.
 - g. Physical location of line.
 - h. Surface type above the line.
 - i. Location on the video tape.
 - j. Date, time, city, street, basin, sewer section, reference manhole number, name of operator, inspector, and weather conditions.
 - k. Pipe diameter, pipe material, section length, depth of pipe, length between joints, and corresponding videotape identification.
 - l. Location of each point of leakage.
 - m. Location of each service connection.
 - n. Location of any damaged sections, nature of damage, and location with respect to pipe axis.
 - o. Deflection in alignment of grade and pipe.
4. Television Inspection Logs: The logs shall be typed or computer printed and acceptable to the City. Printed location records shall be kept by the Contractor and will clearly show the location, in relation to adjacent manholes, of each infiltration point discovered by the television camera. An estimate of the flow rate of observed infiltration points shall be made and recorded. In addition, other points of significance such as locations of building sewer laterals, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features will be recorded and two (2) copies of such records shall be supplied to the Owner.
5. DVD Recordings: The purpose of DVD recording shall be to supply a visual and audio record of the condition of the lines that may be replayed both daily and at future presentations. DVD recording playback shall be at the same speed that it was recorded. Upon completion of the work, all DVD's recorded during the television inspection shall become the property of the City. Cost of DVD's shall be included in the unit price bid. A complete recording shall be made of each line televised. A voice recording on DVD's shall make brief and informative comments on the sewer conditions.
6. The Contractor shall provide 2 professionally bound to the City. A summary shall be included and will include the television inspection log specified in Section 1 of these Specifications. A one page summary sheet shall also be provided which stated the sewer section, length, size, date completed, and totals.
7. If the Contractor notices during the televising of a sewer main that a segment will need to be repaired, the Contractor shall notify the Owner's Representative and Owner immediately.

3.3 SCHEDULING AND COORDINATION

- A. Schedule and coordinate all televising activities with Owner and Owner's Representative.

3.4 CLEANING AND RESTORATION

- A. Return manhole lids to proper location.

3.5 PROJECT RECORD DOCUMENTS

A. Provide Owner's Representative 2 copies of videos and video logs.

PART 4 MEASUREMENT AND PAYMENT

**4.1 ALL WORK DESCRIBED HEREIN IS INCIDENTAL TO OTHER RELATED ITEMS OF WORK. NO MEASUREMENT OR ADDITIONAL PAYMENT WILL BE CONSIDERED.
END OF SECTION**

**SECTION 33 3331
LINING OF EXISTING PIPELINES**

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM F1216–Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin Impregnated Tube
- B. ASTM D5813–Cured-in-place, Thermosetting Resin Sewer Pipe.
- C. ASTM D790–Test Method for Tensile Properties of Non-reinforced and Reinforced Plastics and Electrical Insulating Materials.
- D. ASTM D3034–Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings.
- E. ASTM D638–Test Method for Tensile Properties of Plastics.
- F. ASTM D1248–Specification for Polyethylene Plastics Molding and Extrusion Materials.
- G. ASTM D2120–Method for Determining Dimensions of Thermoplastic Pipe and Fittings.
- H. ASTM D3350–Specifications for Polyethylene Plastics Pipe and Fittings Materials.
- I. ASTM D5813–Standard Specification for Cured-In-Place Thermosetting Basin Sewer Pipe.

1.2 REGULATORY REQUIREMENTS

- A. Occupational Safety and Health Association (OSHA).
- B. All debris shall be disposed of in a landfill or area meeting applicable State and Federal regulations.
- C. Any testing or inspection of debris required prior to disposal shall be the Contractors responsibility.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to the Owners property and securely stored or installed prior to any payment.
- B. Prevent damage of any material during shipping, storage, or handling.
- C. Replace or repair any component that is damaged irregardless of payment.

1.4 WARRANTY

- A. Contractor shall warranty the project for one (1) year from Date of Final Acceptance for any defects in material or workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer's as listed below or approved equal.
 - 1. Felt - Applied Felts Inc., Insitu-Form Inc.
 - 2. Resin - CoRezyn, Interplastic Corp., Chem Iron Systems Inc.

2.2 MATERIALS

- A. Resin:
 - 1. Polyester resin
 - a. General chemical applications.
 - b. Shall not contain fillers, except those required for viscosity control or fire retardant.
 - c. Up to 5% by mass thixotropic agent, which will not interfere with visual inspection, may be added for viscosity control.

- d. Shall be corrosion resistant polyester, vinyl ester, or epoxy.
 - e. Catalyst system shall meet the requirements of ASTM F1216 and the physical properties herein.
 - f. May contain pigments, dyes or colorants that will not interfere with visual inspection of the cured liner.
 - g. Inner surface of the CIPP after installation shall be a light reflective color that can be clearly video inspected.
- 2. Epoxy Resin
 - a. May be required by Contractor dependent on conditions.
 - b. Use of up to 40%, by mass, or suitable fillers may be permitted.
 - 3. Resin Content
 - a. 10% to 15% by volume greater than volume of voids in tube.
- B. Tube
- 1. Coat outside layer with polyethylene or polyurethane prior to wet out.
 - 2. The plastic coating shall:
 - a. Hold the resin inside the tube without leakage.
 - b. Accommodate inversion.
 - c. Be flexible/stretch to size
 - d. Not delaminate.
 - e. Be translucent to clearly allow inspection of the wet out procedure
- C. Felt Reinforcing Material
- 1. Needle interlocked polyester felt formed into sheets of required thickness.
 - 2. Felt tubes may be made of single or multiple layer construction.
 - 3. Any one layer shall not be less than 1.5 mm thick.
 - 4. Mechanical strengthener membrane or strips may be placed between layers where required to control longitudinal stretching.
 - 5. Polyurethane or polyethylene membrane (bladder) used during inversion of tube may be left on internal surface of liner after curing if properly wet out prior to inversion.
 - 6. Minimum thickness of bonded polyurethane membrane and inner liner, if used, shall be 0.25 mm, +5%, and shall not affect structural dimension requirements of cured liner.
 - 7. The sewn felt tube shall:
 - a. Meet the requirements of ASTM F1216 Section 5.1.
 - b. Not contain fiberglass continuous strand mat.
 - c. Withstand inversion pressures.
 - d. Have sufficient strength to bridge missing pipe.
 - e. Stretch to fit irregular pipe sections.
 - f. Invert smoothly around bends.
 - g. Fit tightly the internal circumference and length of the original pipe.
 - h. Be homogeneous across the entire wall thickness.
 - i. Not contain intermediate or encapsulated elastomeric layers.
 - j. Have the ability to stretch to accommodate minor circumference changes.
 - k. Not contain any material that could cause delamination.
 - l. Not contain any dry or unsaturated layers.
 - 8. Felt Content
 - a. Content shall ensure cured thickness of liner as specified.
 - b. The wet out tubes shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.

- c. Final thickness shall be as specified (+10% to - 5%) and shall not include thickness of polyurethane inner liner.
- D. Structural Requirements
 - 1. The CIPP shall be designed as per ASTM F1216 Appendix XI.
 - 2. The CIPP design shall assume no bonding to the original pipe wall.
 - 3. The Long Term Flexural Modulus to be used in Design shall be verified by independent testing and certification of these tests shall be included in bid package.
 - 4. Long Term Modulus shall not exceed 50% of the short term values given in this section.
 - 5. CIPP thickness shall not be less than that computed from the Dimension ratio (DR), for resin systems with the physical properties shown.
 - 6. The layers of the CIPP shall be uniformly bonded.
 - 7. It shall not be possible to separate any two layers with a probe or knife blade.
 - 8. If separation of the sample layers occurs during field testing, new sample layers will be selected and cut from the work. Any reoccurrence may cause rejection of the work.
 - 9. Cured liner shall conform to minimal structure standards listed:

a.	Tensile Strength	ASTM D638	3,000 psi
b.	Flexural Module of Elasticity	ASTM D790	250,000 psi.
c.	Flexural Strength	ASTM D790	4,500 psi.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspection of pipelines shall be by closed circuit televising equipment utilizing minimum 1.4 lux camera with pan/tilt head.
- B. All services shall be dyed and documented.
- C. Examine condition of pipe interior before relining.
- D. If Contractor or Owner's Representative determines the existing pipe is 15% or more out of round, Contractor shall redesign liner.

3.2 TELEVISIONING

- A. All pipelines shall be televised prior to any relining.
- B. Performed by experienced personnel trained in locating breaks, obstacles, and service connections by close circuit television.
- C. Log all breaks obstacles, service connection locations, or any item that may affect the relining of the pipe.
- D. Submit two copies of the pre-reline tapes and logs to the Owner or Representative before relining.
- E. Televiser the installed liner with services re-opened.
- F. Submit two copies of the post reline tapes and logs to the Owner or Representative before submitting final pay request.

3.3 PREPARATION

- A. No liner shall be installed until it has been approved.
- B. No liner will be approved until liner thickness calculations have been submitted and reviewed.
- C. Sufficiently clean roots and other debris from sewer line.
- D. Contractor is responsible for removing obstructions such as solids, roots and protruding taps.

- E. Remove or repair offset joints, protruding services, or collapsed pipe that will prevent proper insertion of liner.
- F. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor shall make a point repair excavation to fix the obstruction.
- G. Point repair excavation shall be approved in writing by the Owner's Representative prior to the commencement of the work and shall be considered as a separate pay item.
- H. All debris removed shall be hauled to an acceptable disposal site (see section 1.5).

3.4 PUBLIC NOTIFICATION

- A. Contractor shall deliver a written notice to affected Residents, one (1) week prior to work in their zone, containing:
 - 1. Description of work
 - 2. Schedule of when the project will take place and length of service disruption.
 - 3. How the work will affect the Residents.
 - 4. Contractor's local telephone number.
- B. Contractor shall make personal contact to each affected Resident one (1) day prior to work in their zone.
- C. If Resident is not home a door hanger shall be used to notify the resident.
- D. Personal contact to any home or business which cannot be reconnected within the time stated in the previous notices.

3.5 INSTALLATION OF CIPP LINER

- A. Water stops:
 - 1. Installation:
 - a. Prior to installation of the CIPP, the Contractor shall install gasket water stops to the interior circumference of the existing sewer at the inlet and outlet of each manhole, and as otherwise directed by the Owner's Representative.
 - b. Installation shall be as recommended by the Manufacturer.
 - 2. Material:
 - a. Duraseal ¾" by ¼", modified vinyl co-polymer gasket as manufactured by Avanti International or approved equal.
 - b. Adhesive as supplied by the water stop Manufacturer.
 - 3. Payment:
 - a. Payment for this item shall be incidental to the Reline bid item.
- B. Preparation of Liner:
 - 1. Designate location where uncured resin in original containers and unimpregnated liner will be vacuum impregnated.
 - 2. Contractor shall allow Owner's Representative to inspect materials and wet out procedure.
 - 3. The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall.
 - 4. A vacuum impregnating process shall be used.
 - 5. Vacuum point shall be no further than 25 feet from the point of initial resin introduction.
 - 6. After vacuum in the tube is established, the vacuum points shall be no further than 75 feet from the leading edge of the resin.

7. The leading edge of the resin slug shall be as near to perpendicular as possible.
 8. A roller system shall be used to uniformly distribute the resin throughout the tube.
 9. Resin and catalyst system compatible with requirements of this method shall be used.
 10. Quantities of liquid thermosetting materials shall be to Manufacturer's standards to provide lining thickness required.
 11. Liner tube shall be impregnated with resin not more than 48 hours before proposed installation.
 12. Liner tube shall be shipped and stored out of direct sunlight at temperature less than 40 degrees Fahrenheit (4 degrees Celsius).
 13. Transport impregnated liner to site immediately prior to inversion.
- C. Insertion of Liner:
1. Hydrostatic Head
 - a. Insert liner through an existing manhole or other access by means of an inversion process and application of hydrostatic head sufficient to fully extend liner to next designated manhole or termination point.
 - b. Owner shall provide the source for the water necessary to complete the installation of the liner.
 - c. During installation, minimize gouging and stretching the liner particularly for all bends and non-circular sections encountered.
 2. Air Pressure
 - a. Insert liner through an existing manhole or other access by means of an inversion process and application of air pressure sufficient to fully extend liner to next designated manhole or termination point.
 - b. Use a lubricant during inversion to reduce friction. The lubricant shall be a nontoxic, oil based product that has no detrimental effects to the tube or boiler and pump system, will not support the growth of bacteria, and will not adversely affect the fluid to be transported.
 - c. During installation, minimize gouging and stretching the liner particularly for all bends and non-circular sections encountered.
- D. Curing Liner:
1. Circulating Heated Water
 - a. After inversion is complete, provide heat source and water recirculation equipment.
 - b. Equipment shall be capable of delivering hot water throughout section to uniformly raise water temperature above temperature required to realize an exotherm.
 - c. Curing shall be accomplished by utilizing water under hydrostatic pressure of a vertical standpipe.
 - d. Provide heat source with suitable monitors to gauge temperature of incoming and outgoing water supply.
 - e. Place second gauge inside the impregnated liner at remote manhole to determine temperatures during cure.
 - f. Water temperature in line during cure period shall be as recommended by Resin Manufacturer.
 - g. Initial cure shall be complete when inspection of exposed portions of liner is hard, sound, and remote temperature sensor indicates that temperature is of magnitude to realize an exotherm.

- h. Cure period shall be of duration recommended by Resin Manufacturer.
 - i. Cool hardened liner to temperature below 100 degrees F before relieving static head in inversion standpipe.
 - j. Cool down by introduction of cool water into inversion standpipe to replace water being drained from downstream end.
 - k. Care shall be taken in release of static head so that vacuum will not be developed that could damage newly installed liner.
2. Steam
- a. After inversion is complete, provide heat source and steam generating equipment.
 - b. Equipment shall be capable of distributing steam throughout section to uniformly raise water temperature above temperature required to realize a cure of the resin
 - c. Curing shall be accomplished by utilizing steam under air pressure.
 - d. Provide heat source with suitable monitors to gauge temperature of incoming and outgoing water supply.
 - e. Place second gauge inside the impregnated liner at remote manhole to determine temperatures during cure.
 - f. Water temperature in line during cure period shall be as recommended by Resin Manufacturer.
 - g. Initial cure shall be complete when inspection of exposed portions of liner is hard, sound, and remote temperature sensor indicates that temperature is of magnitude to realize an exotherm.
 - h. Cure period shall be of duration recommended by Resin Manufacturer.
 - i. Cool hardened liner to temperature below 113 degrees F before relieving air pressure.
 - j. Cool down by introduction of cool water into inversion pipe to replace the air and steam being drained from the downstream end.

3.6 SCHEDULING AND COORDINATION

- A. Contractor shall schedule and coordinate all construction activity with the Owner and Owner's Representative.
- B. Contractor shall submit a written schedule to the Owner's Representative at least two (2) weeks prior to construction.

3.7 TOLERANCES

- A. Refer to applicable test requirements.

3.8 FIELD QUALITY CONTROL

- A. Finished liner:
 - 1. Liner shall be continuous over entire length of insertion run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes and delamination.
 - 2. During curing process, gauge water tightness under positive head.
 - 3. For projects installed with a removable bladder, the pipe must be tested for water tightness after the bladder is removed by an exfiltration test.
 - 4. Rate of exfiltration not greater than 200 gallons per day per inch diameter per mile of liner.
 - 5. Liner shall conform to shape of pipe existing before installation and not be out of round by more than 15%.
- B. Liner Thickness:

1. Cured liner shall be accurately measured and shall meet the requirements of these specifications.
- C. Felt and Resin Content of Liner:
 1. Number of layers of felt shall conform to specifications, as verified by visual inspection of liner.
 2. Calculate resin to felt ratio by weight.
 3. Ratio shall fall in range 1.0:1 to 1.5:1.
- D. Testing:
 1. Tensile Strength (For Pressure Pipe)
 - a. Test in accordance with ASTM D638.
 - b. Specimens tested shall be actual thickness of fabricated liner.
 - c. Do not machine specimen on surface.
 - d. Tensile strength shall be average of 5 specimens tested.
 2. Flexural Strength and Modules of Elasticity:
 - a. Test in accordance with ASTM D790.
 - b. Specimens tested shall be actual thickness of fabricated liner.
 - c. Do not machine specimen on surface.
 - d. Make test with smooth (inner) face in tension using 5 specimens.
 - e. Strength and Modulus must meet or exceed values in the design submittal.
 3. Examination:
 - a. Televisive interior of pipe after completion of work and provide tapes to Owner as specified in section 3.2.
 - b. Use pan and tilt, color, 1.4 lux or lower rated camera to view the sewer service lateral connection reinstatements.

3.9 SERVICE CONNECTIONS

- A. Reinstall and reconnect service connections unless service connection is deemed to be inactive or abandoned by Owner.
- B. Determine service connection locations from television inspection tapes and logs completed by Contractor.
- C. Reconnect services without excavation by television camera and robotic cutting devices.
- D. Reopen services to minimum of 95% original diameter.
- E. Certify a minimum of two (2) complete working cutter units plus spare components are on site prior to each inversion.
- F. No additional payment will be made for excavations to reopen service connections.
- G. Contractor will be responsible for all costs and liability associated with excavation and restoration work.
- H. Sanitary services shall not be out of service for more than twelve (12) consecutive hours during the project.
- I. Verify that all live services have been opened.

3.10 MANHOLES

- A. Contractor shall reopen all manholes that are involved in the lining project.
- B. The top portion of the liner will be removed between the inlets and outlets of the manholes down to the bench level.
- C. If voids or spaces are found between the liner and manhole, grout will be used to fill, create a smooth transition and allow drainage of the manhole into the liner.
- D. Liners that end in a manhole shall be removed to the inlet opening.

- E. Grout shall be used to create a smooth transition from the existing manhole invert and the liner.

3.11 CLEANING AND RESTORATION

- A. Remove rubbish, debris, dirt, equipment, and excess materials from site.
- B. Clean adjacent surfaces soiled by and during course of work.
- C. Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area affected by project operations.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measure liner along centerline of sewer from center of starting manhole to the center of ending manhole.
- B. Measure service connections per each connection reopened regardless of main or service size.

4.2 PAYMENT

- A. Payment for all bid items related to this specification shall include all labor, materials, and equipment required to complete the project as per this specification.
- B. Payment for liner will be per linear foot (LF) installed and accepted for the bid item Reline Existing Pipe.
- C. Payment for service connections shall be by each (EA) for the bid item Reopen Existing Service.

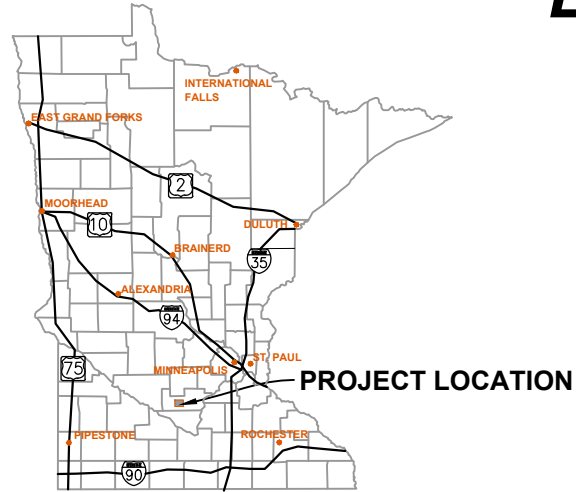
END OF SECTION

EL NUEVO TRAILER PARK WATER & SEWER REPAIR

EL NUEVO AMANECER COOPERATIVE

GAYLORD, MINNESOTA

JANUARY 2025



STATE OF MINNESOTA

Base Bid Quantities		
Item	Unit	Quantity
Mobilization	LS	1
Erosion Control	LS	1
Abandon 2" Watermain	LS	1
Remove Pavement	SY	845
Remove Trees	EA	1
Connect to Ex. Water	EA	1
Water Meter Manhole	EA	1
Watermain Fittings	EA	8
3" Gate Valve	EA	8
3" PVC Water Main	LF	454
Bore Pipe 3" Dia. PVC	LF	878
Water Services	EA	31
Spot Repair	EA	5
Deep Clean Sanitary Sewer Piping	LF	1440
Line Sanitary Sewer Piping	LF	1440
Line Sanitary Sewer Manhole	EA	5
Repair Service Protusion	EA	1
48" Sanitary Manhole	EA	1
Reopen Services	EA	31
Temporary Sewage Bypass	LS	1
Asphalt Pavement	SY	845
Site Restoration	EA	6

Alternate 1 Quantities		
Item	Unit	Quantity
1.5" Mill & Overlay	SY	3162
Asphalt Patch	SY	842

Alternate 2 Quantities		
Item	Unit	Quantity
Remove Pavement	SY	3162
Asphalt Pavement	TON	703
6" Aggregate Base	CY	527

BASIS OF SURVEY

ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON NAD83 STATE PLANE COORDINATE SYSTEM, MINNESOTA - SIBLEY COUNTY, GEOID18, US SURVEY FOOT AND NAVD-88 VERTICAL DATUM.



GAYLORD, MINNESOTA



VICINITY MAP

NO SCALE



EL NUEVO AMANECER COOPERATIVE
2610 UNIVERSITY AVEW, SUITE 150
ST PAUL, MN 55114

300 23RD AVE EAST, SUITE 100
WEST FARGO, ND 58078
PH: 701.232.5353
www.kljeng.com



KLJ PROJECT NO. 2416-00827

INDEX OF SHEETS

C100	COVER SHEET
C200	GENERAL NOTES, LEGEND, & ABBREVIATIONS
C300	EXISTING CONDITIONS & REMOVALS
C400	SITE PLAN LAYOUT
C500	UTILITY LAYOUT
C501-C505	UTILITY PLAN & PROFILE
C600	EROSION CONTROL NOTES
C601	EROSION CONTROL PLAN
C700-C702	DETAIL SHEETS

CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MINNESOTA.


JEREMY DEWALD, PE

DATE: 01/14/2025

CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: JEREMY DEWALD

SIGNATURE: 

DATE: 01/14/2025 LICENSE NUMBER: 56225



NOTES:

- 1. THESE NOTES APPLY TO THE ENTIRE PROJECT EXCEPT AS INDICATED OTHERWISE. CONTRACTOR SHOULD NOTE THAT ADDITIONAL CONSTRUCTION NOTES ARE INCLUDED ON INDIVIDUAL DRAWINGS.
- 2. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
- 3. ANY ERRORS OR OMISSIONS DISCOVERED BY THE CONTRACTOR IN THE PLANS OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER WHEN DISCOVERED. THE CONTRACTOR SHALL ALLOW TIME FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
- 4. REQUESTS FOR SUBSTITUTIONS OR DEVIATIONS FROM THE PLANS OR SPECIFICATIONS BY THE CONTRACTOR OR OWNER SHALL BE APPROVED IN WRITING BY THE ENGINEER OR ARCHITECT PRIOR TO IMPLEMENTATION.
- 5. THE CONTRACTOR SHALL EMPLOY AND PAY FOR THE SERVICES OF AN INDEPENDENT TESTING LABORATORY TO PERFORM ALL INSPECTIONS, TESTS, OR APPROVALS REQUIRED BY THE CONTRACT DOCUMENTS AND FOR COMPLETION OF ALL PHASES OF THE WORK. CONTRACTOR SHALL COORDINATE SCHEDULE WITH OWNER'S TESTING AGENCY.
- 6. THE CONTRACTOR SHALL HIRE AN ENGINEERING OR SURVEYING FIRM TO PROVIDE CONSTRUCTION STAKING SERVICES. CONTACT KLJ AT 701-232-5353 TO REQUEST A QUOTE.
- 7. THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS. ANY MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- 8. CONTRACTOR SHALL PROVIDE A ONE (1) WEEK NOTICE TO ENGINEER, OWNER, AND PROPERTY OWNERS PRIOR TO BEGINNING ANY CONSTRUCTION.
- 9. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THEIR REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. UNDERGROUND LOCATES SHALL BE MADE BY USING MINNESOTA "ONE CALL" NUMBER 1-800-252-1166 OR 811.
- 10. THIS PLAN SET INCLUDES A LEGEND OF GENERAL ABBREVIATIONS, SYMBOLS AND MATERIALS. SOME SYMBOLS, MATERIALS, AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- 11. THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL NECESSARY PERMITS.
- 12. THE CONTRACTOR SHALL MAINTAIN INGRESS/EGRESS ACCESS TO THIS PROPERTY AND ADJACENT PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL COORDINATE DETOURS AND ANY TEMPORARY CLOSURES WITH THE OWNER. THE CONTRACTOR SHALL KEEP THE DURATION OF ALL CLOSURES AND DETOURS TO A MINIMUM. ALL DETOURS AND CLOSURES SHALL BE INSTALLED PER MUTCD REQUIREMENTS.

REMOVALS & DEMOLITION:

- 13. CONTRACTOR SHALL FULL DEPTH SAW CUT PAVEMENT PRIOR TO REMOVAL.
- 14. ANY EXISTING STRUCTURES DISTURBED BY CONSTRUCTION AND NOT CALLED FOR REMOVAL ARE TO BE RESTORED TO THEIR ORIGINAL LOCATION AND CONDITION. THIS INCLUDES ALL STRUCTURES SUCH AS CURB AND GUTTER, ADJACENT PAVEMENT, SIDEWALKS, ETC.
- 15. MISCELLANEOUS ITEMS INCLUDING, BUT NOT LIMITED TO, MAILBOXES, STREET LIGHTS, TRAFFIC LIGHTS, SIGNS, FENCES, POLES, ETC. SHALL BE PROTECTED OR REMOVED AND REINSTALLED BY THE CONTRACTOR WITH THE OWNERS AND PROPERTY OWNERS PERMISSION, AND THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT.
- 16. EXCESS EXCAVATED MATERIAL INCLUDING PIPE, STUMPS, ROOTS, SOIL MATERIALS OR ANY OTHER ITEMS THE OWNER DOES NOT WISH TO SALVAGE SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY, INCIDENTAL TO THE CONTRACT. ALL CONCRETE SHALL BE LEGALLY DISPOSED OF OFFSITE, INCIDENTAL TO THE CONTRACT.
- 17. CONTRACTOR SHALL PROTECT EXISTING TREES AS MUCH AS POSSIBLE. ANY DAMAGED TREES SHALL BE REMOVED AND DISPOSED OF OFFSITE TO AN APPROVED LANDFILL.
- 18. CONTRACTOR SHALL PROTECTS ALL BUILDINGS DURING CONSTRUCTION. ANY REPAIRS OR DAMAGE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

GRADING:

- 19. EXISTING CONTOURS ARE SHOWN AT EXISTING GRADE.
- 20. PROPOSED CONTOURS ARE SHOWN AT FINISH GRADE.

TRAFFIC CONTROL AND SIGNAGE:

- 21. THE CONTRACTOR SHALL MAINTAIN INGRESS/EGRESS ACCESS TO THIS PROPERTY AND ADJACENT PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL COORDINATE DETOURS AND ANY TEMPORARY CLOSURES WITH THE CITY OF GAYLORD ENGINEERING DEPARTMENT. THE CONTRACTOR SHALL KEEP THE DURATION OF ALL CLOSURES AND DETOURS TO A MINIMUM.
- 22. THE CONTRACTOR SHALL MAINTAIN TEMPORARY DETOUR ROADS UNTIL DETOUR IS NO LONGER NECESSARY. MAINTENANCE COSTS SHALL BE INCIDENTAL TO THE CONTRACT.
- 23. THE CONTRACTOR SHALL FOLLOW THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION.
- 24. THE CONTRACTOR SHALL FOLLOW MNDOT STANDARD DRAWINGS WHEN SETTING UP THE TRAFFIC CONTROL DEVICES.

EROSION CONTROL:

- 25. CONTRACTOR IS RESPONSIBLE FOR MINIMIZING TRACKING OF SOIL AND DEBRIS ONTO ROADWAYS. TRACKING MUST BE REMOVED BY THE END OF EACH DAY.
- 26. THE CONTRACTOR SHALL BE REQUIRED TO CLEAN STREETS WITHIN AND ADJACENT TO THE PROJECT SITE IMPACTED BY CONSTRUCTION THROUGHOUT THE DURATION OF THE PROJECT. UPON PROJECT COMPLETION, CONTRACTOR SHALL PERFORM A FINAL CLEANING AND SHALL REPAIR ANY DAMAGES TO ONSITE AND ADJACENT IMPROVEMENTS CAUSED BY CONSTRUCTION TO PRE-CONSTRUCTION CONDITIONS.
- 27. THE CONTRACTOR SHALL UTILIZE AN OFFSITE CONCRETE, WASHOUT, OR INSTALL A CENTRAL CONCRETE WASHOUT LOCATION AND PROVIDE A SIGN TO IDENTIFY THE CONCRETE WASHOUT AREA. THE CONTRACTOR SHALL CONSTRUCT A PIT TO PREVENT WASHOUT WATER FROM FLOWING TO THE STORM WATER COLLECTION SYSTEM.
- 28. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED WITH LANDSCAPE MATERIALS. GRADING CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING IN AREAS WHICH WILL BE EXPOSED FOR MORE THAN 14-DAYS PRIOR TO INSTALLATION OF PERMANENT GROUND COVER.

LEGEND		
EXISTING	ITEM	PROPOSED
☉	FIRE HYDRANT	☉
⊗	GATE VALVE	⊗
⊙	CURB STOP	⊙
↔↔↔↔	BEND	↔↔↔↔
⊕	TEE	⊕
✕	CROSS	✕
↔	REDUCER	↔
↘	VERTICAL BEND	↘
W	WATER MANHOLE	W
W	WATER METER	W
S	SANITARY MANHOLE	S
FM	SANITARY FORCEMAIN MANHOLE	FM
⊗	SANITARY MANHOLE W. VALVE	⊗
CL	CLEANOUT	CL
ST	STORM SEWER MANHOLE	ST
III	CURB INLET	III
⊕	CATCH BASIN	⊕
☐	POWER POLE	☐
→	GUY WIRE	→
☼	LIGHT POLE	☼
E	ELECTRICAL PEDESTAL	E
E	ELECTRICAL METER	E
J	ELECTRICAL JUNCTION (PULL BOX)	J
☐	ELECTRICAL BOX	☐
⊕	ELECTRICAL OUTLET/PLUG-IN	⊕
E	ELECTRICAL MANHOLE	E
T	TELEPHONE MANHOLE	T
P	TELEPHONE PEDESTAL	P
P	CABLE TV PEDESTAL	P
P	FIBER OPTIC PEDESTAL	P
G	GAS METER	G
G	GAS MANHOLE	G
u	UTILITY MARKER	u
X	TREES CONIFEROUS/ DECIDUOUS	X
B	BUSH/SHRUB	B
S	SIGN	S
▲	CONTROL POINT	▲
★	BENCHMARK	★
∩	PIPE CAP	∩
⊙	PROPERTY PIN	⊙

29. CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHEN 70% VEGETATION IS ESTABLISHED.

30. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS CONTROLLING POLLUTION OF THE ENVIRONMENT. NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT POLLUTION OF STREAMS, LAKES, PONDS, AND RESERVOIRS WITH FUELS, OILS, BITUMENS, CHEMICALS, OR OTHER HARMFUL MATERIALS AND TO PREVENT POLLUTION OF THE ATMOSPHERE FROM PARTICULATE AND GASEOUS MATTER. THIS MAY MEAN EMPLOYING ADEQUATE DUST FILTERS, SMOKE COLLECTORS, CONTROLLING BURNING, WATERING HAUL ROADS, PROVIDING EROSION PROTECTION, OR ANY OTHER MEANS NEEDED TO MEET EXISTING REQUIREMENTS. NO ADDITIONAL PAYMENT WILL BE MADE TO THE CONTRACTOR FOR ANY EXPENSES NEEDED TO COMPLY WITH APPROPRIATE AIR AND WATER POLLUTION CONTROL STANDARDS.

31. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH ALL APPLICABLE MINNESOTA POLLUTION CONTROL AGENCY (MPCA) REQUIREMENTS, PARTICULARLY WATER QUALITY STANDARDS FOR SURFACE WATER AND AIR POLLUTION CONTROL REGULATIONS, INCLUDING LOCAL AND GENERAL REQUIREMENTS, PERTAINING TO CONTROL OF OR ABATEMENT OF AIR AND WATER POLLUTION.

DEWATERING

32. IF NECESSARY, CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE DEWATERING EQUIPMENT TO REMOVE AND DISPOSE OF ANY SURFACE AND GROUNDWATER ENTERING THE TRENCH. ALL COSTS ASSOCIATED WITH WELLPOINT DEWATERING, AND OTHER PUMP SYSTEMS, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. PERMITS REQUIRED FOR DEWATERING SHALL BE OBTAINED BY THE CONTRACTOR.

SPOT REPAIRS

33. A "SPOT REPAIR" IS MEASURED AS FOLLOWS: FOR EVERY 20 FEET OF REPAIR IT SHALL BE CONSIDERED EQUAL TO ONE (1) UNIT

WATER SHUTDOWN

34. IF NECESSARY, WATER MAIN SHUT DOWN SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT. THE CONTRACTOR IS RESPONSIBLE FOR PROPERTY NOTIFICATION. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER AT LEAST 48 HOURS IN ADVANCE OF TEMPORARY DISRUPTION OF WATER SERVICE. ALL AFFECTED WATER USERS SHALL BE NOTIFIED A MINIMUM OF 24 HOURS PRIOR TO SHUTDOWN. NOTIFICATION SHALL BE IN WRITING AND SHALL INDICATE THE ESTIMATED DURATION. IF ACTUAL SHUTDOWN VARIES FROM THE STATED TIME BY MORE THAN ONE HOUR, A SECOND VERBAL NOTIFICATION IS REQUIRED. THE CONTRACTOR SHALL NOT OPERATE ANY CITY OWNED HYDRANTS OR VALVES.

LEGEND		
EXISTING	ITEM	PROPOSED
----	ASPHALT EDGE	----
TV	CABLE TV - UNDERGROUND	TV
---	CENTERLINE	---
----	CONSTRUCTION LIMITS	----
E(O)	ELECTRICAL - OVERHEAD	E(O)
E	ELECTRICAL - UNDERGROUND	E
X	FENCE - BARBED WIRE	X
○	FENCE - CHAINLINK	○
	FENCE - PLASTIC, VINYL	
□	FENCE - WOOD	□
/	FENCE - WOVEN WIRE	/
FO	FIBER - UNDERGROUND	FO
G	GAS - UNDERGROUND	G
----	GRAVEL EDGE	----
S	SANITARY SEWER SERVICE LINE	S
S	SANITARY SEWER (LESS THAN 24")	S
ST	STORM SEWER (LESS THAN 24")	ST
ST	STORM SEWER (24" OR MORE)	ST
T	TELEPHONE - UNDERGROUND	T
W	WATER SERVICE LINE	W
W	WATER MAIN	W

ABBREVIATIONS

BM	BENCH MARK	MAX	MAXIMUM
BLDG	BUILDING	ME	MATCH EXISTING
C&G	CURB & GUTTER	MH	MANHOLE
CL	CENTERLINE	MIN	MINIMUM
CMP	CORRUGATED METAL PIPE	PVC	POLYVINYL CHLORIDE PIPE
CP	CONTROL POINT	PP	POWER POLE
CONC	CONCRETE	R	RADIUS
CS	CURB STOP	RCP	REINFORCED CONCRETE PIPE
CY	CUBIC YARD	R/W	RIGHT-OF-WAY
EA	EACH	SAN	SANITARY
ELEV	ELEVATION	SF	SQUARE FEET
ESMT	EASEMENT	SEC	LINE SECTION LINE
EX	EXISTING	STA	STATION
FES	FLARED END SECTION	STD	STANDARD
FFE	FINISHED FLOOR ELEVATION	SW	SIDEWALK
FG	FINISHED GRADE	SY	SQUARE YARD
GR	GRAVEL	TA	TOP OF ASPHALT
HDPE	HIGH DENSITY POLYETHYLENE PIPE	TBC	TOP BACK OF CURB
HP	HIGH POINT	TC	TOP OF CONCRETE
HYD	HYDRANT	TEL	TELEPHONE
INV	INVERT	TEMP	TEMPORARY
L	LENGTH	TP	TOP OF PAVEMENT
LF	LINEAR OR LINEAL FEET	VCP	VITRIFIED CLAY PIPE
LP	LIGHT POLE	WM	WATER MAIN
LS	LUMP SUM	WV	WATER VALVE

35. IF THE WATER TO A PROPERTY IS TO BE OUT FOR MORE THAN 12 HOURS, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A TEMPORARY WATER SERVICE TO THE AFFECTED WATER USERS. THE METHOD OF PROVIDING THE TEMPORARY WATER SERVICE SHALL BE AN OPTION OF THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE ENGINEER.



CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: JEREMY DEWALD

SIGNATURE: [Signature]

DATE: 01/14/2025 LICENSE NUMBER: 56225

REVISION	
NO.	DATE

EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANCECER COOPERATIVE
 GAYLORD, MINNESOTA
GENERAL NOTES, LEGEND, & ABBREVIATIONS

TITLOW LAKE

EDGE OF WATER AS LOCATED NOVEMBER 18, 2022

BENCHMARK:
BM-1: TOP NUT OF HYDRANT LOCATED BETWEEN LOTS 4 & 5.
ELEV 988.48



NOTES:

- ALL EXISTING WATER SERVICES ARE 1" COPPER.
- SURVEY COMPLETED BY OTHERS AND PROVIDED TO KLJ ON 05/22/2024. KLJ HAS NOT VERIFIED ACCURACY OF THE SURVEY PROVIDED. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN EXISTING WATER CONNECTION TO TRAILERS UNTIL NEW LINES AND SERVICES ARE CONNECTED.
- CONTRACTOR SHALL REMOVE AND DELIVER EXISTING WATER METER TO CITY AND CUT WATER LINE(S) IN BUILDING TO MATCH EXISTING FLOOR ELEVATION AND PLUG WITH CONCRETE.
- SEWER LINE FROM LOTS 18 THRU 24 WERE NOT INSPECTED PRIOR TO DESIGN.
- CONTRACTOR SHALL REMOVE EXISTING WATER SERVICES 12" BELOW EXISTING GRADE AND CAP.

CONTACT TY REIMERS, PUBLIC WORKS DIRECTOR AT (507) 479.3445

SEWER LINE FROM LOTS 18 THRU 24 WERE NOT INSPECTED PRIOR TO DESIGN.

CONTRACTOR SHALL REMOVE EXISTING WATER SERVICES 12" BELOW EXISTING GRADE AND CAP.

REVISION

DATE

NO.

DRAFTED	JLL
REVIEWED	JJD
PROJECT NUMBER	2416-00827
ISSUE DATE	01/14/2025

NO.

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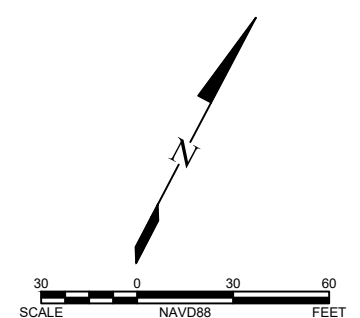
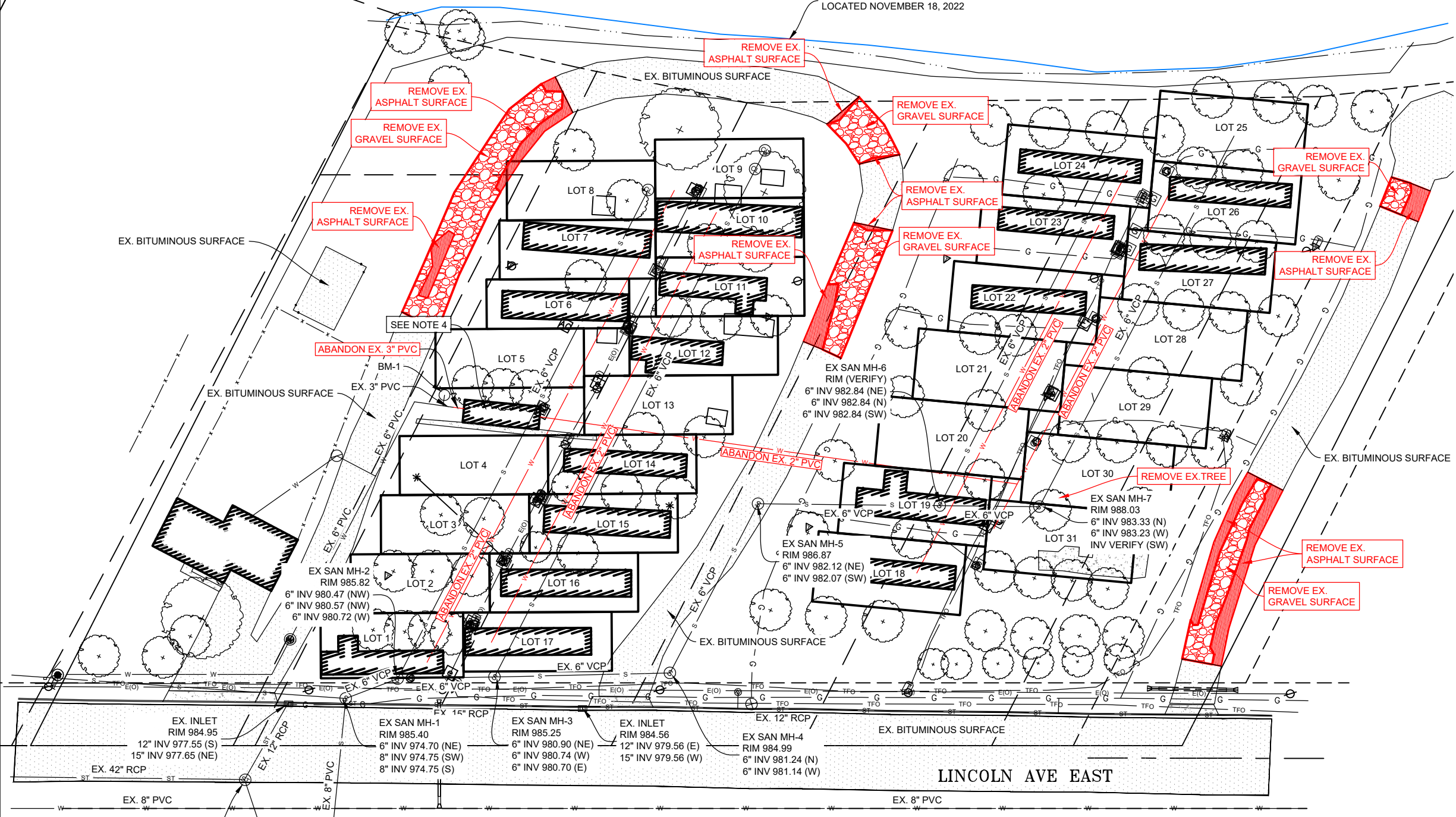
DATE

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DATE

NO.

DATE



LEGAL DESCRIPTION

PARCEL 1:
LOT NUMBER TWO (2), KLIMMEK'S 1ST ADDITION, BEING A SUBDIVISION PART OF GOVERNMENT LOT 4 IN SECTION 28, TOWNSHIP 113, RANGE 28, EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PROPERTY: THE SOUTH 300.00 FEET OF THE WEST 95.00 FEET OF LOT 2 OF KLIMMEK'S 1ST ADDITION, SIBLEY COUNTY, MINNESOTA, ACCORDING TO THE RECORDED PLAT THEREOF, AS MEASURED ALONG OR PARALLEL TO THE WEST AND SOUTH LINES OF SAID LOT 2. ALSO LOTS NUMBER THREE, FOUR, FIVE, SIX AND SEVEN (3,4,5,6,7) OF KLIMMEK'S 1ST ADDITION, BEING A SUBDIVISION OF PART OF GOVERNMENT LOT 4 IN SECTION 28, TOWNSHIP 113, RANGE 28.

SIBLEY COUNTY, MINNESOTA
TORRENS PROPERTY

PARCEL 2:
THE SOUTH 300.00 FEET OF THE WEST 95.00 FEET OF LOT 2 OF KLIMMEK'S 1ST ADDITION, SIBLEY COUNTY, MINNESOTA, ACCORDING TO THE RECORDED PLAT THEREOF, AS MEASURED ALONG OR PARALLEL TO THE WEST AND SOUTH LINES OF SAID LOT 2, BEING A SUBDIVISION OF PART OF GOVERNMENT LOT 4 IN SECTION 28, TOWNSHIP 113, RANGE 28.

SIBLEY COUNTY, MINNESOTA
TORRENS PROPERTY

CERTIFICATION

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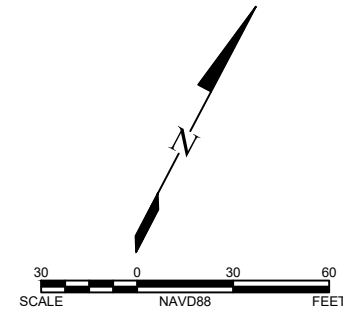
DATE: 01/14/2025 LICENSE NUMBER: 56225

EL NUEVO TRAILER PARK WATER & SEWER REPAIR
EL NUEVO AMANECCER COOPERATIVE
GAYLORD, MINNESOTA
EXISTING CONDITIONS & REMOVALS

SHEET
C300

TITLOW LAKE

EDGE OF WATER AS LOCATED NOVEMBER 18, 2022



NOTES:

1. DIMENSIONS LISTED ARE TO EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
2. THE CONTRACTOR SHALL FOLLOW THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION.
3. THE CONTRACTOR SHALL FOLLOW CITY OF GAYLORD AND MNDOT STANDARD DRAWINGS WHEN SETTING UP THE TRAFFIC CONTROL DEVICES.
4. SEE SHEET C701 FOR SITE DETAIL(S).

PLAN KEY NOTES:

- ① STANDARD ASPHALT PAVEMENT - SEE DETAIL 6/C701

ALTERNATE 1:

1. 1.5" MILL AND OVERLAY TRAILER PARK ASPHALT ROADS AFTER PAVEMENT REPAIRS HAVE BEEN COMPLETED.

ALTERNATE 2:

2. FULL DEPTH REMOVE & REPLACE TRAILER PARK ROADS.

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EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA
SITE PLAN

NO.	DATE	REVISION

DRAFTED: JLL
 REVIEWED: JJD
 PROJECT NUMBER: 2416-00827
 ISSUE DATE: 01/14/2025



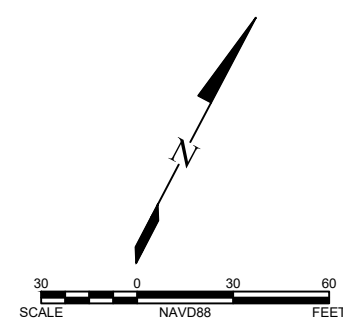
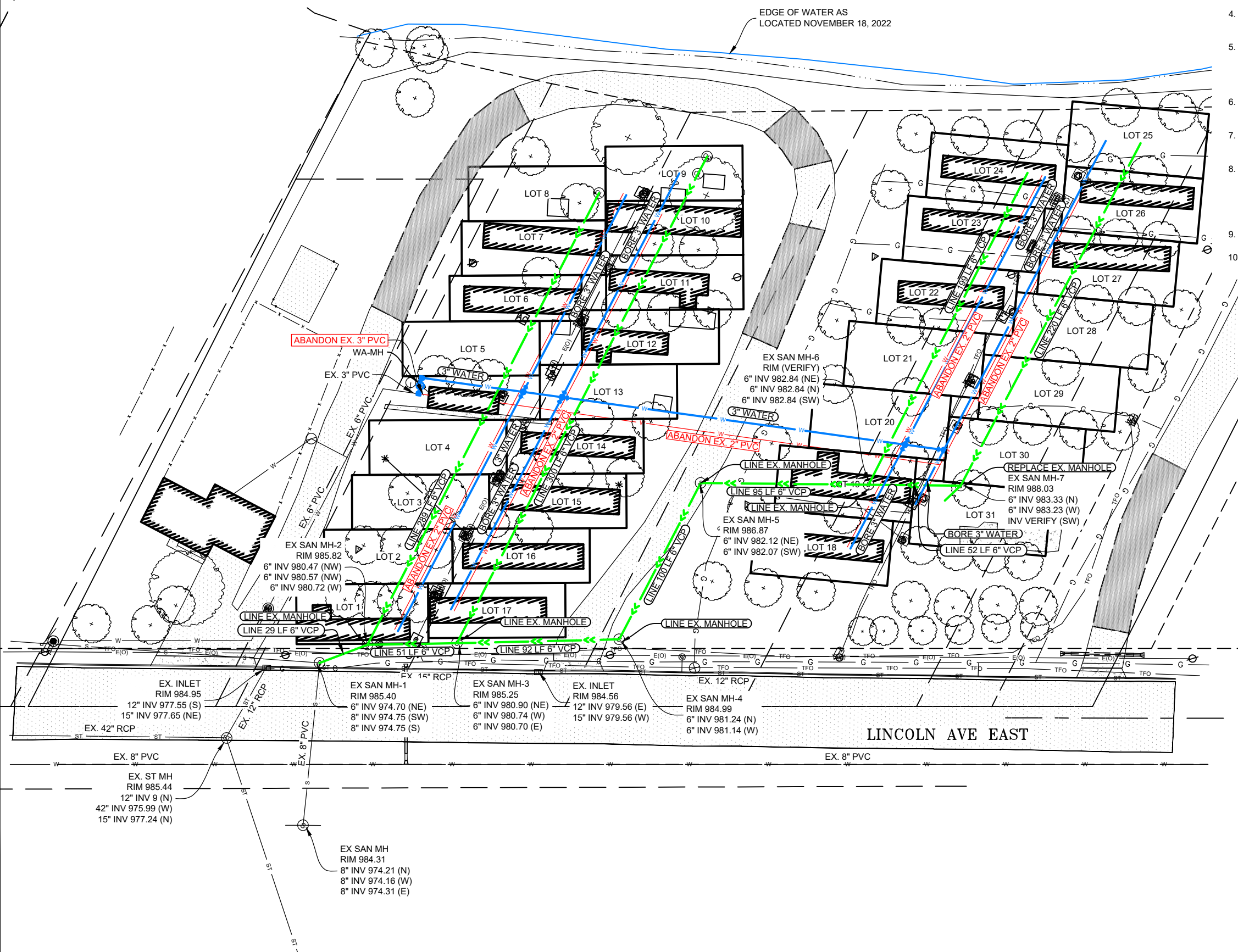
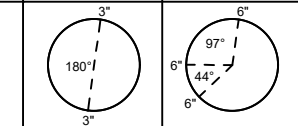
TITLOW LAKE

EDGE OF WATER AS LOCATED NOVEMBER 18, 2022

WATER & SANITARY:

1. ALL PIPE DIMENSIONS ARE LISTED TO CENTER OF STRUCTURE.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE MATERIALS, SIZES, AND LOCATIONS AT ALL LOCATIONS.
3. SEE SHEETS C700 - C701 FOR UTILITY DETAILS.
4. CONTACT TY REIMERS, PUBLIC WORKS DIRECTOR AT (507) 479.3445 FOR NEW 2" WATER METER.
5. WATER LINES SHALL BE DIRECTIONAL BORED WHERE POSSIBLE, WHILE SERVICE CONNECTION LOCATIONS NEED TO BE HAND DUG. TIE IN LINES WITH APPROPRIATE FITTING BEFORE FILLING AND COMPACTING GROUND.
6. CONTRACTOR SHALL POT HOLE TO VERIFY EXISTING UTILITY DEPTHS PRIOR TO DIRECTIONAL BORING.
7. REMOVE ROOT SYSTEMS, DEEP CLEAN, AND LINE EXISTING SANITARY SEWER LINES.
8. LOT 14 HAS A SERVICE LINE PROTRUDING INTO THE SERVICE MAIN. SERVICE AND MAIN SHALL BE REPAIRED BY ADDING A NEW SADDLE AND CONNECTING EXISTING SERVICE. CONTRACTOR HAS OPTION TO SUBMIT AN ALTERNATIVE REPAIR SOLUTION TO ENGINEER FOR REVIEW AND APPROVAL.
9. EXISTING SANITARY MANHOLES EX-2 THRU EX-7 SHALL BE LINED.
10. REPAIR COVER SLAB/RINGS ON EXISTING SANITARY MANHOLE EX-7.

STRUCTURE NO.	WA-MH	SAN MH-7
SIZE/TYPE	60" MANHOLE	48" MANHOLE
MANUFACTURER	CONCRETE	CONCRETE
CASTING - FRAME	NEENAH R-1733	NEENAH R-1733
CASTING - GRATE	SOLID	SOLID



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PRINTED NAME: JEREMY DEWALD

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EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA
UTILITY LAYOUT

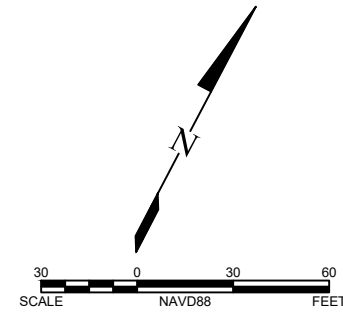
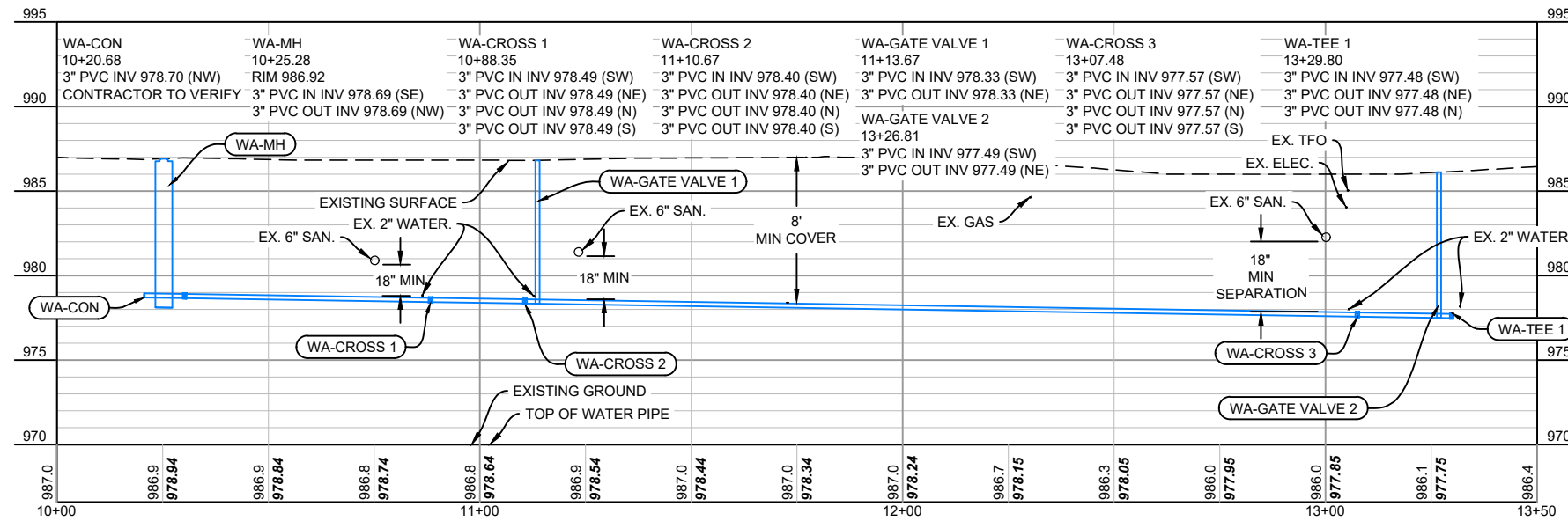
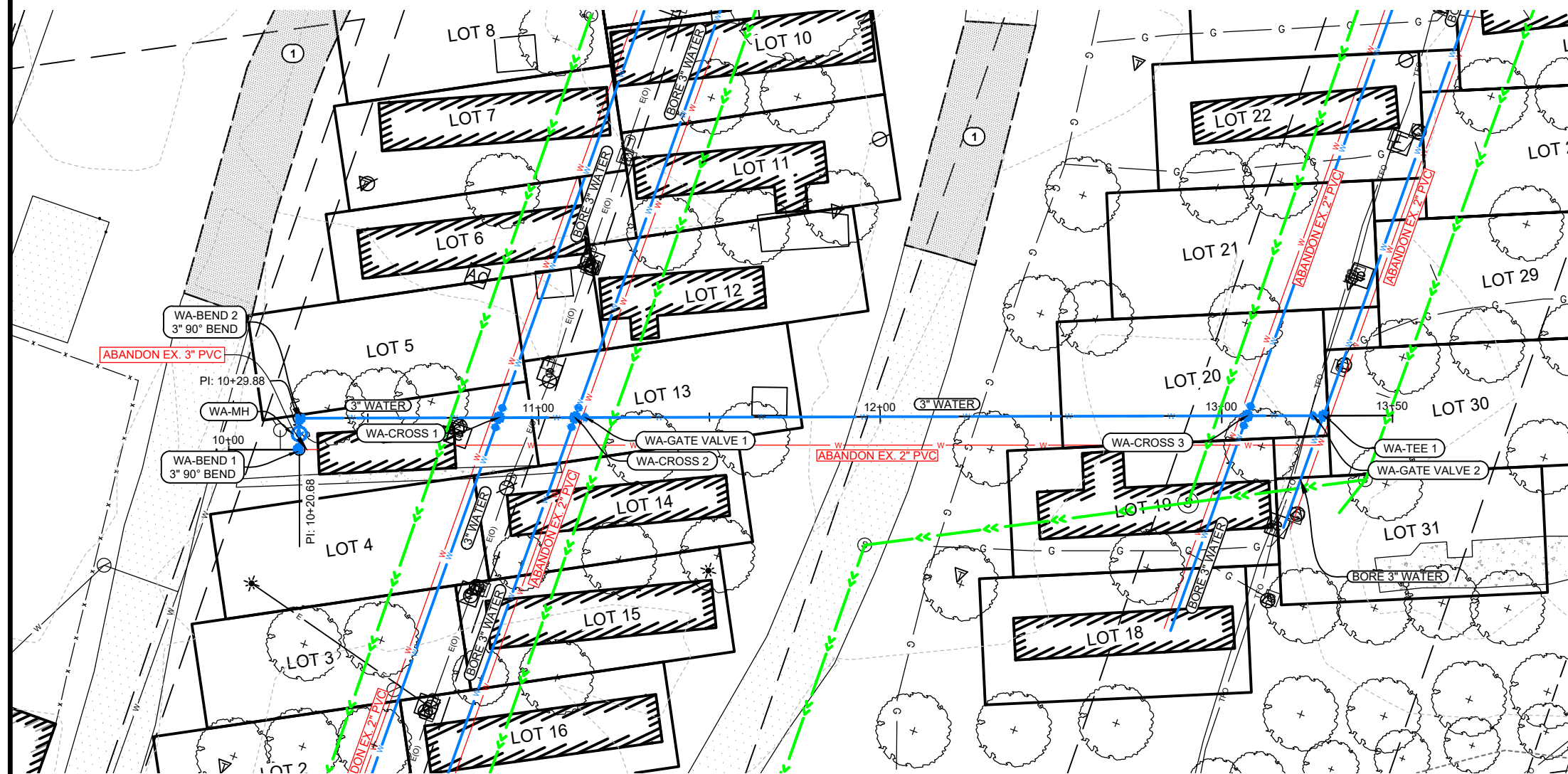
NO.	DATE	REVISION
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		REVIEWED JJD
		PROJECT NUMBER 2416-00827
		ISSUE DATE 01/14/2025

SHEET
C500



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3. SEE SHEETS C700 - C701 FOR UTILITY DETAILS.
4. CONTACT GAYLORDS UTILITIES FOR WATER SERVICE SPECIFICATIONS.
5. WATER LINES SHALL BE DIRECTIONAL DRILLED WHERE POSSIBLE. WHILE SERVICE CONNECTION LOCATIONS NEED TO BE HAND DUG, TIE IN LINES WITH APPROPRIATE FITTING BEFORE FILLING AND COMPACTING GROUND.
6. CONTRACTOR SHALL POTHOLE TO VERIFY EXISTING UTILITY DEPTHS PRIOR TO DIRECTIONAL BORING.



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EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA
UTILITY PLAN & PROFILE

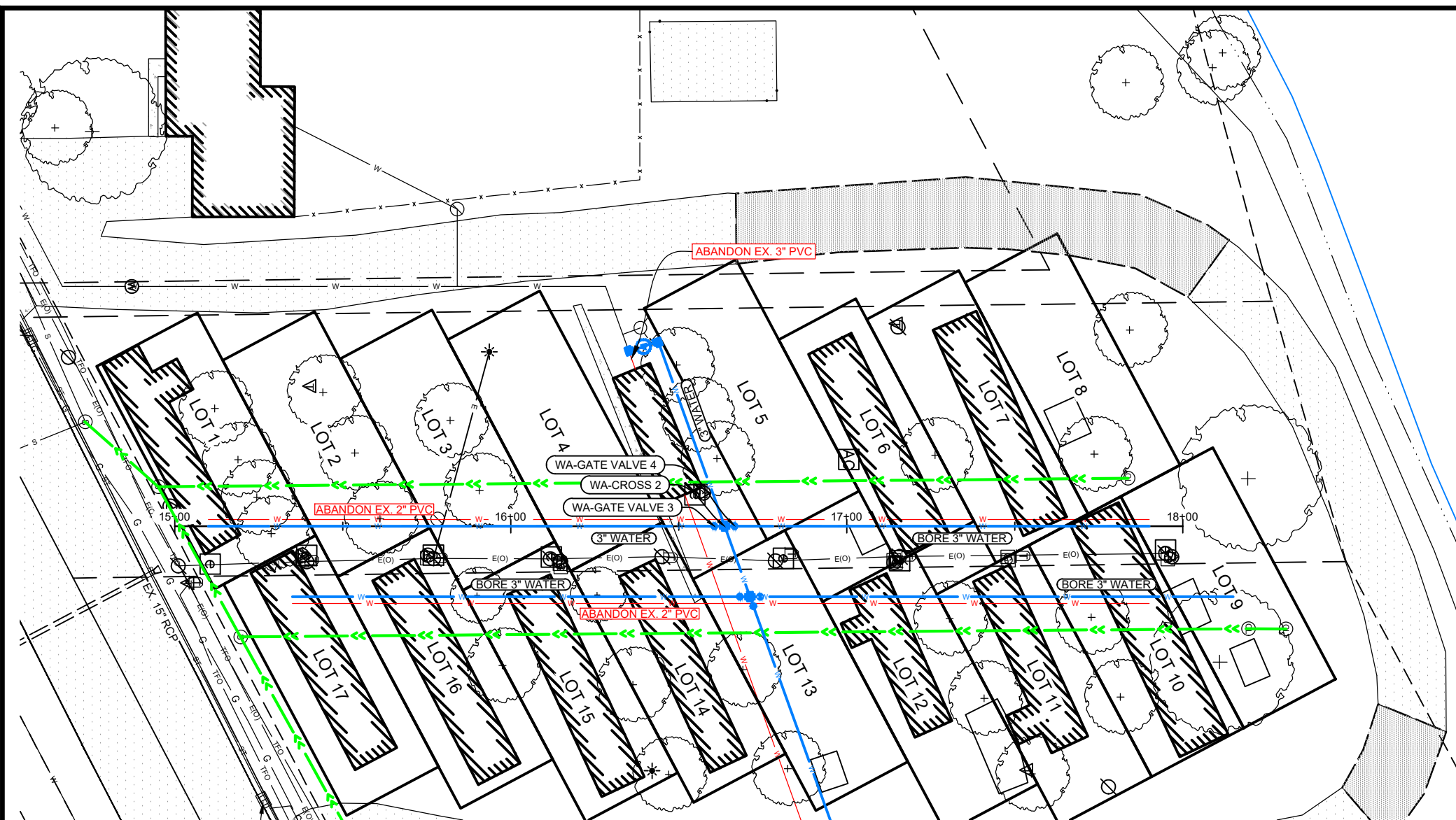
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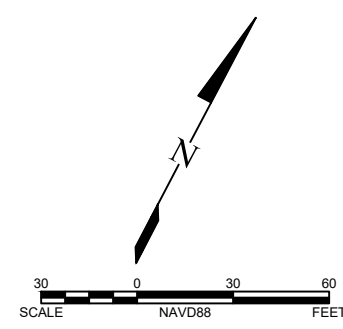
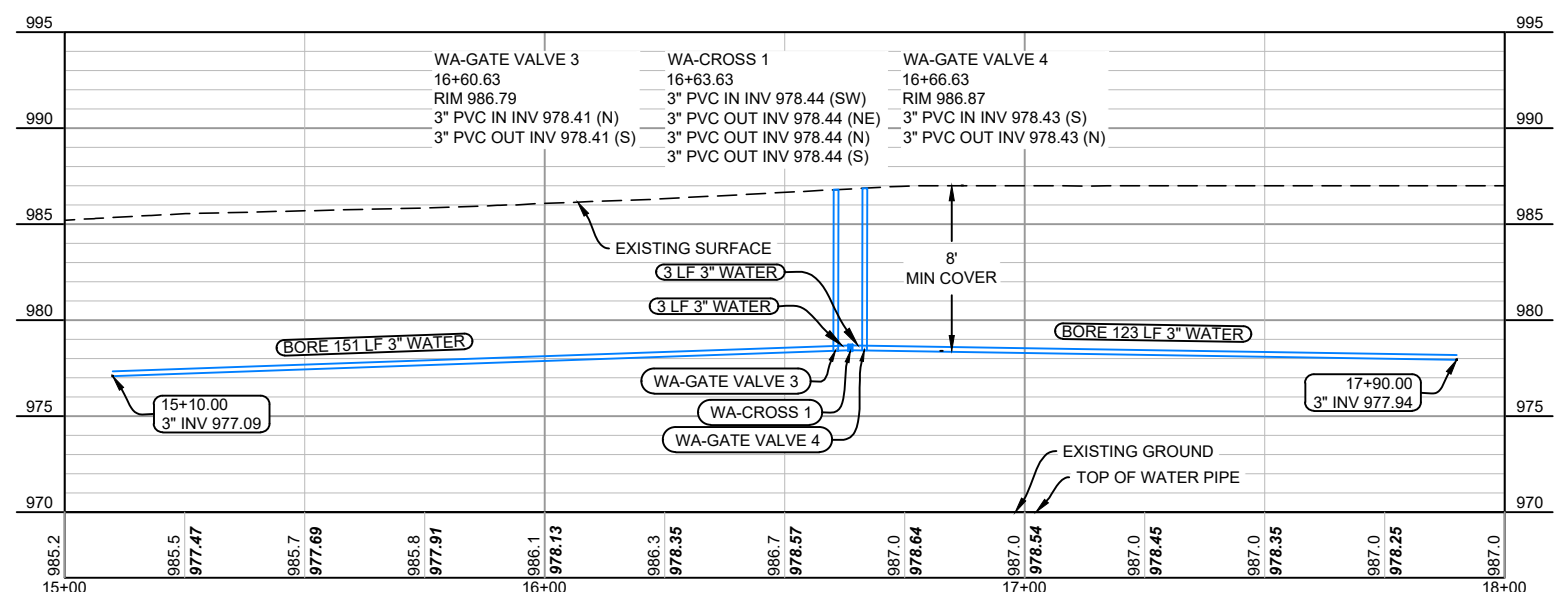


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		JJD
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		2416-00827
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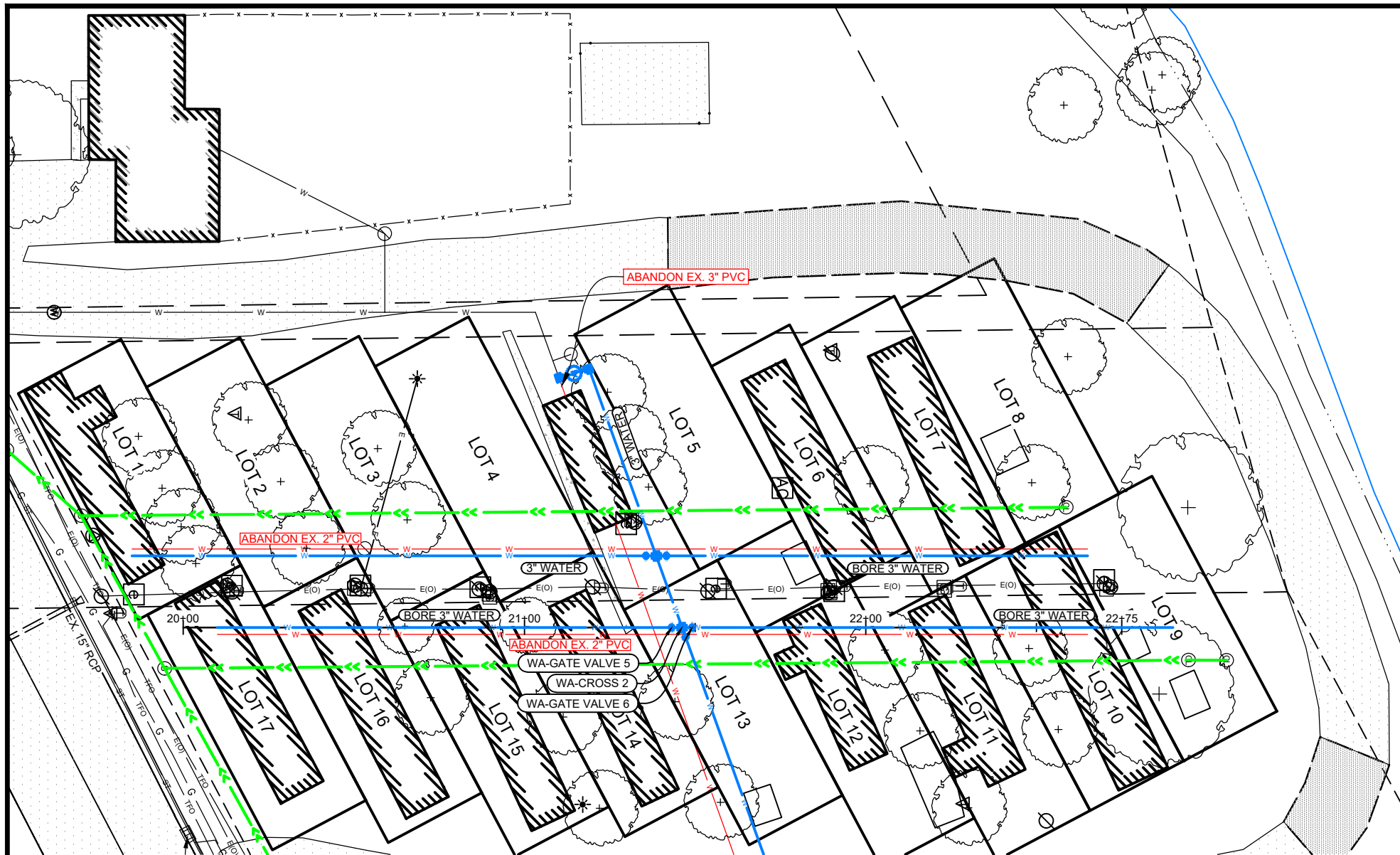
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 EL NUEVO AMANECCER COOPERATIVE
 GAYLORD, MINNESOTA

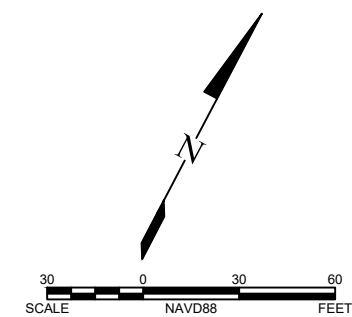
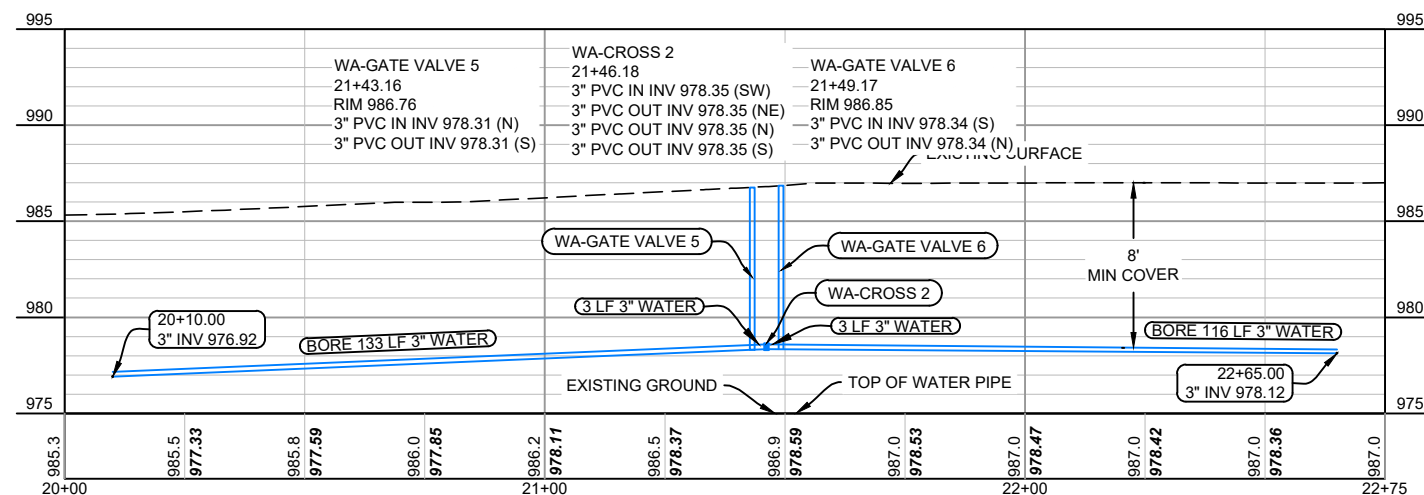
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EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA
UTILITY PLAN & PROFILE



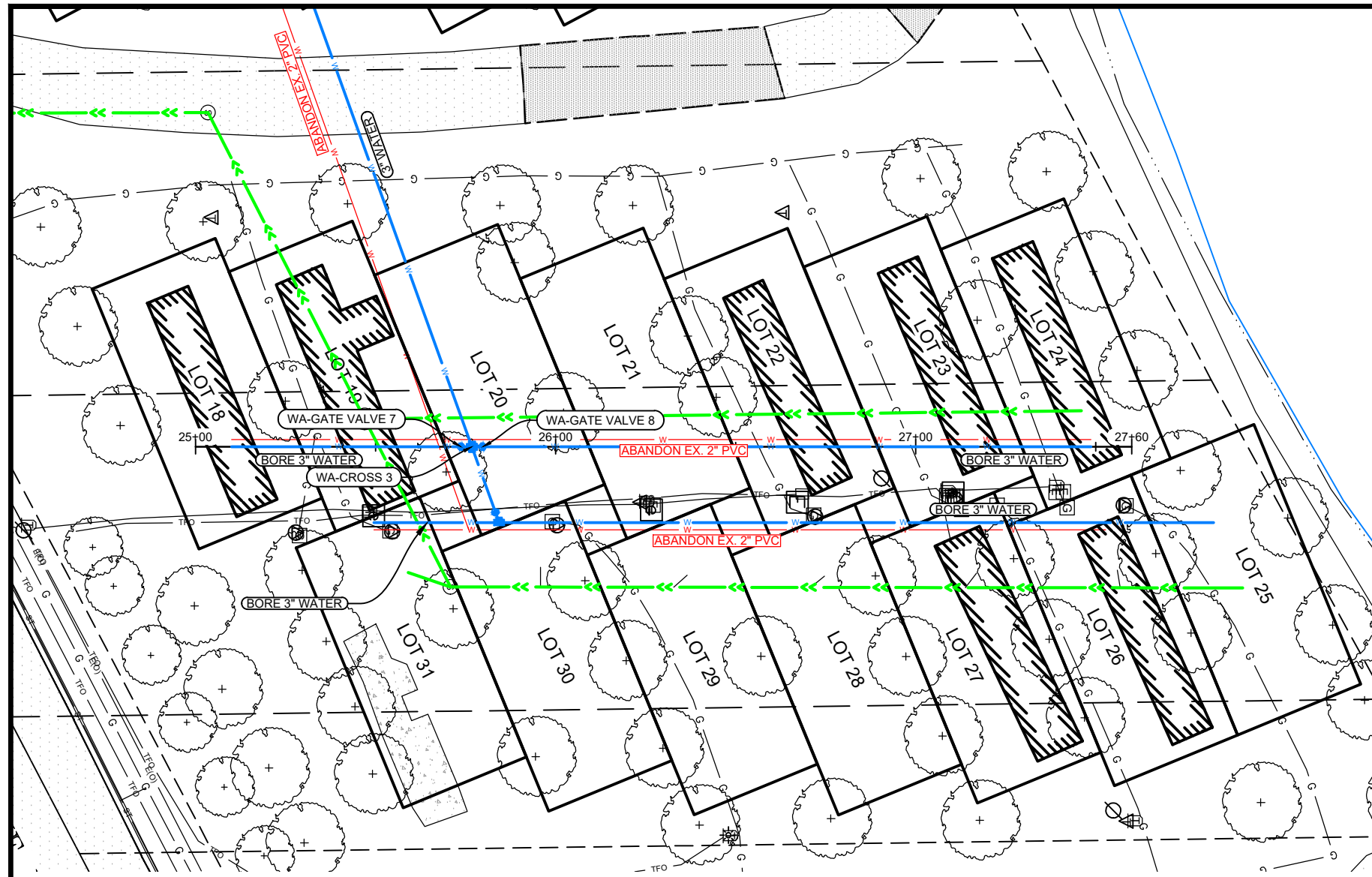
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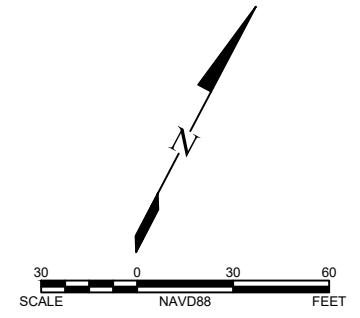
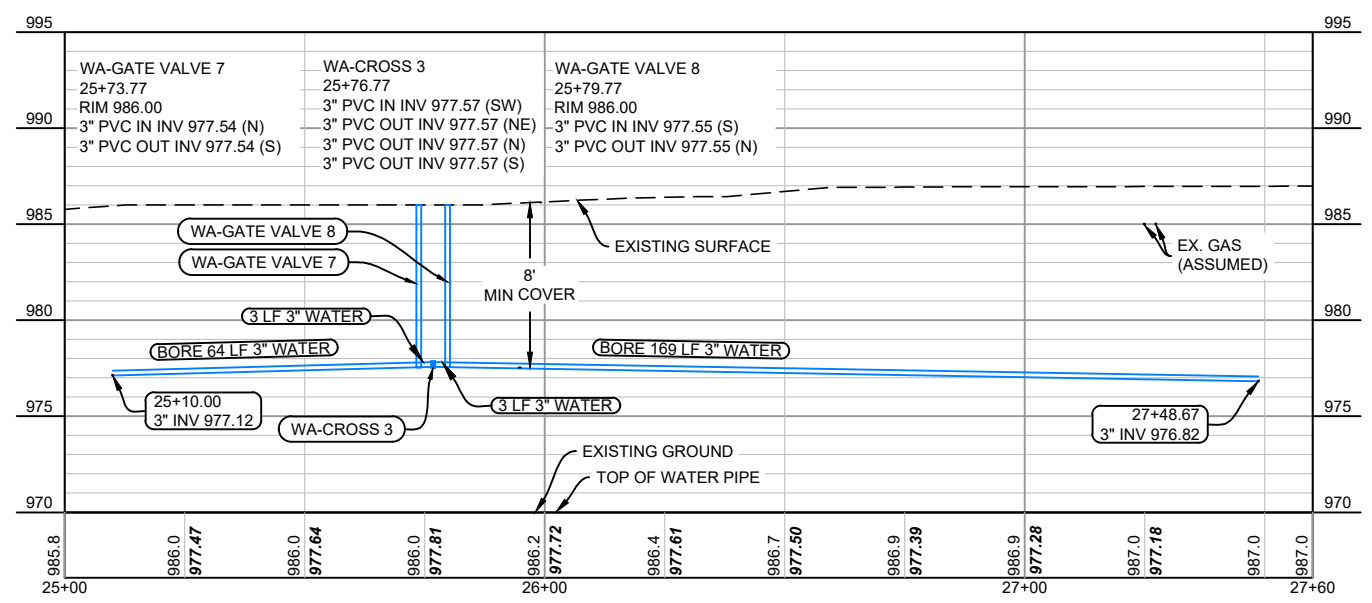


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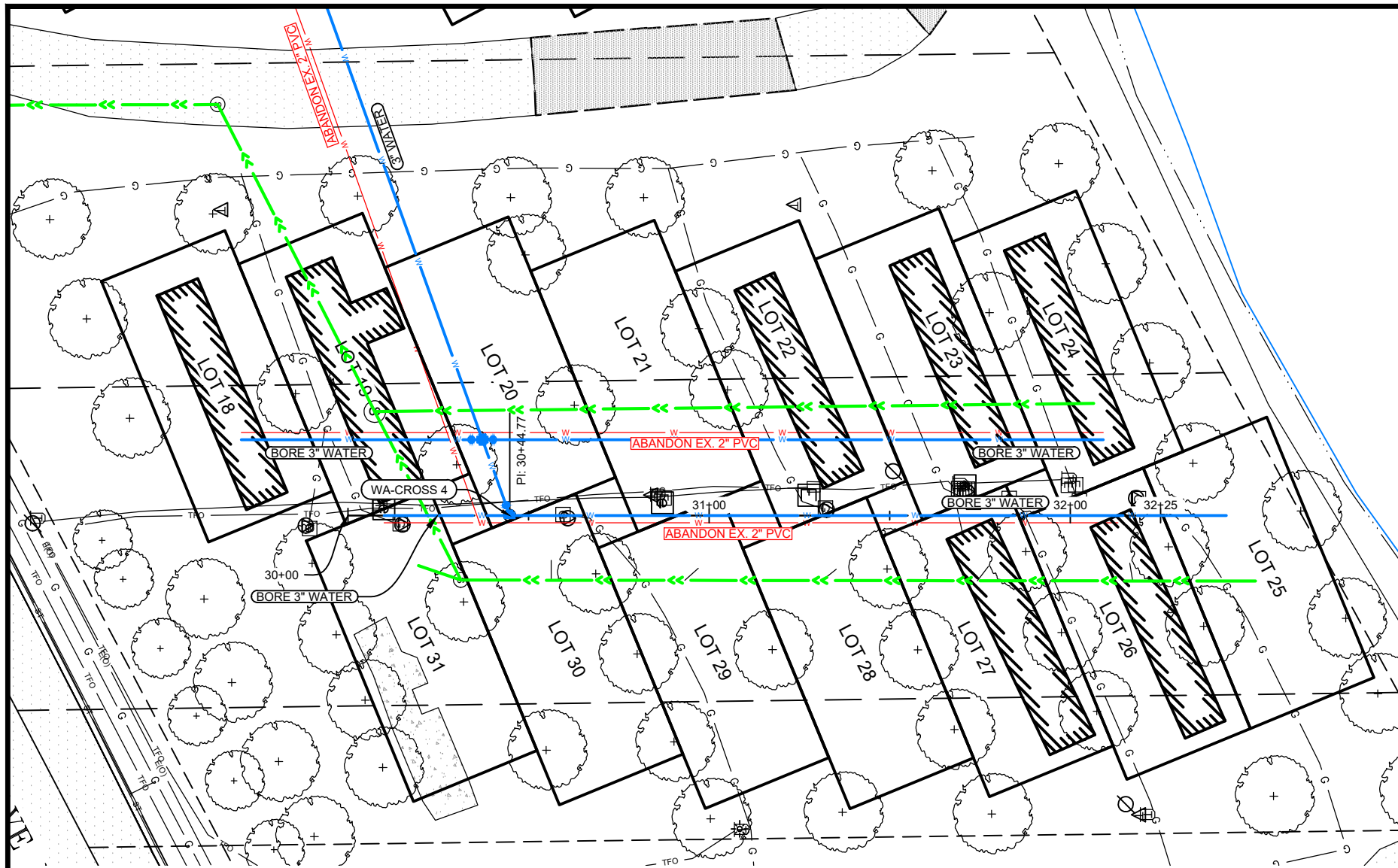
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 GAYLORD, MINNESOTA

UTILITY PLAN & PROFILE

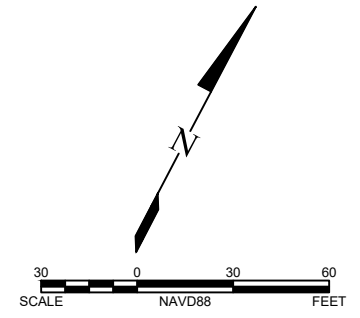
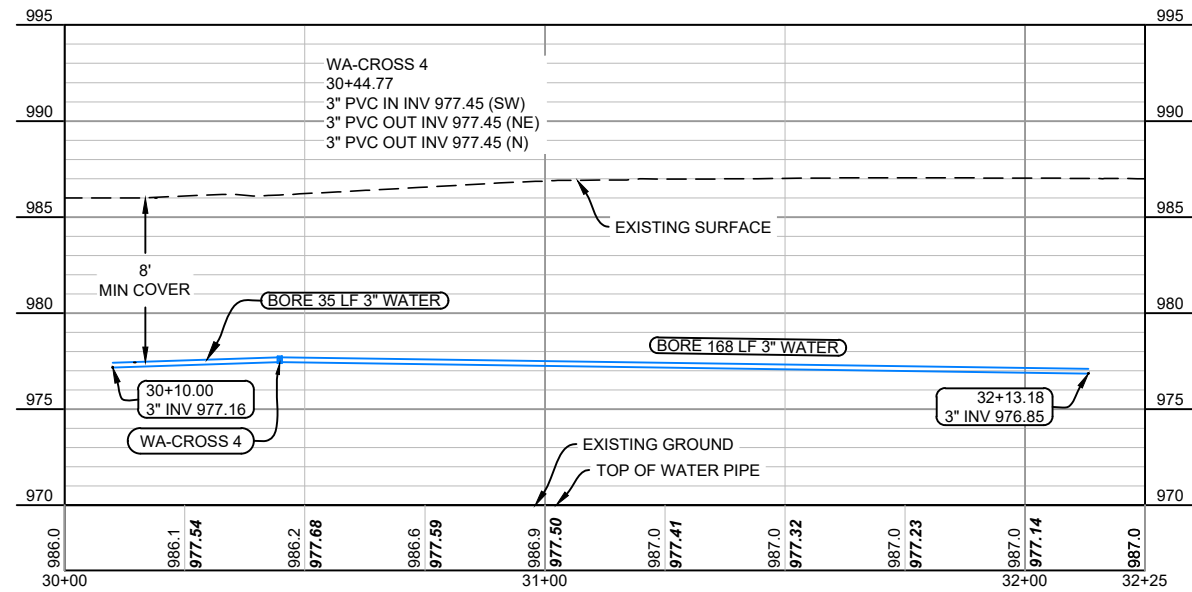


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	08/16/2024	
DRAFTED JLL		
REVIEWED JJD		
PROJECT NUMBER 2416-00827		
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EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA

UTILITY PLAN & PROFILE

SHEET
C505



SITE DESCRIPTION

THE PROJECT CONSISTS OF EXISTING BUILDINGS, UNDERGROUND UTILITIES, AND PAVEMENT. THE PROJECT IS LOCATED ON LOTS 2 THRU 7, BLOCK 1, KIMMEK'S 1ST ADDITION, CITY OF GAYLORD, SIBLEY COUNTY, MINNESOTA. THE SITE IS BOUND BY LINCOLN AVENUE EAST TO THE SOUTH, RESIDENTIAL HOUSING TO THE EAST AND WEST, AND TITLOW LAKE TO THE NORTH. THE SITE IS LOCATED ON A 3.94 ACRES (EXCLUDING RIGHT OF WAYS) PARCEL WITH AN ESTIMATED DISTURBANCE OF 0.59 ACRES.

THE SITE IS CURRENTLY AN EXISTING TRAILER PARK AND GENERALLY HALF OF THE TRAILER PARK DRAINS TO THE NORTH AND THE OTHER HALF TO THE SOUTH AT GRADUAL GRADES.

THE PROPOSED SITE WILL CONSIST MAINLY OF EXISTING SURFACES, SUCH AS EXISTING BUILDING AND ASPHALT ROADS. EXISTING STORMWATER FLOWS OVERLAND TO TITLOW LAKE AND TO CITY RIGHT OF WAY.

CONSTRUCTION SCHEDULE

1. INSTALL SEDIMENT CONTROLS (I.E. CONSTRUCTION ENTRANCE, SILT FENCE, INLET PROTECTION, ETC.)
2. INSTALL TEMPORARY SOIL STABILIZATION ON DISTURBED AREAS
3. INSTALL WATER AND SANITARY SEWER
4. COMPLETE PAVING OPERATIONS
5. SITE SHALL BE STABILIZED TO MEET REQUIREMENTS FOR DISCHARGES TO IMPAIRED WATERS PER SECTION 23 OF THE MPCA CONSTRUCTION STORMWATER PERMIT.
6. MULCH AND SEED ALL DISTURBED AREAS WITHIN 14 DAYS OF TOPSOIL PLACEMENT AND GRADING.

SOIL DESCRIPTION

THE EXISTING SOILS FOR THE SITE CONSISTING PRIMARILY OF CANISTEO CLAY LOAM.

RECEIVING WATERS

THE TITLOW LAKE AND THE CITY OF GAYLORD STORM SEWER SYSTEM IS THE RECEIVING WATER FOR THE SITE.

OPERATIONAL CONTROLS

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT THE SWPPP PERMIT AND A NOTICE OF INTENT AND EROSION CONTROL PLAN TO THE OWNER 35 DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES FOR REVIEW.
2. THE CONTRACTOR AND OWNER ARE JOINTLY REQUIRED TO SUBMIT A NOTICE OF INTENT (NOI) TO THE MINNESOTA POLLUTION CONTROL AGENCY (MPCA) AT LEAST 7 DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE SWPPP AS REQUIRED BY THE MPCA. THE PLAN PROVIDES STRUCTURAL CONTROLS AND/OR STABILIZATION PRACTICES DESIGNED TO MINIMIZE POLLUTANTS IN THE STORMWATER DISCHARGE, TO MINIMIZE EROSION ON THE SITE, AND TO ELIMINATE TRACKING OF SOILS OFFSITE BY VEHICLES.
4. A REGULAR PROGRAM OF INSPECTION AND MAINTENANCE OF THE EROSION, SEDIMENT AND POLLUTION CONTROLS WILL BE MAINTAINED, MODIFIED, AND SUPPLEMENTED BY ADDITIONAL MEASURES IN ORDER TO ADEQUATELY MINIMIZE POLLUTANTS.
5. THE CONTRACTOR SHALL UPDATE SWPPP IF DIFFERENT FROM SWPPP PLAN THROUGHOUT CONSTRUCTION.
6. THE CONTRACTOR AND OWNER ARE JOINTLY REQUIRED TO SUBMIT A NOTICE OF TERMINATION (NOT) AFTER THE SITE HAS BEEN STABILIZED, CONSTRUCTION IS COMPLETE, AND TEMPORARY EROSION CONTROL MEASURES HAVE BEEN REMOVED.
7. STORMWATER MANAGEMENT CONTROLS IN ADDITION TO THOSE SHOWN ON THE PLANS SHALL BE PLACED, MAINTAINED, AND REMOVED AT THE DISCRETION OF THE CONTRACTOR OR AT THE DIRECTION OF THE ENGINEER AS NECESSARY.

GOOD HOUSEKEEPING

1. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL, UNLESS THE CONTAINER IS NOT RE-SEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT SAFETY INFORMATION.
2. ALL HAZARDOUS MATERIALS STORAGE AREAS SHALL HAVE RESTRICTED ACCESS TO PREVENT VANDALISM.
3. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR AGENCY-RECOMMENDED METHODS OF PROPER DISPOSAL WILL BE FOLLOWED.
4. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
5. ALL NON-HAZARDOUS WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED METAL DUMPSTERS OR OTHER APPROVED CONTAINMENT METHOD AT THE END OF EACH DAY.
6. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN

THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY TO FUNCTION AS INTENDED FOR DEBRIS COLLECTION. NO CONSTRUCTION MATERIALS WILL BE BURIED ONSITE. ALL PERSONNEL WILL BE INSTRUCTED BY THE CONTRACTOR'S EROSION CONTROL SUPERVISOR REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL.

7. ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AT A RATE NECESSARY TO MAINTAIN DESIGNED FUNCTION, BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.
8. GOOD HOUSEKEEPING AND SPILL CONTROL PRACTICES WILL BE FOLLOWED DURING CONSTRUCTION TO MINIMIZE STORMWATER CONTAMINATION FROM PETROLEUM PRODUCTS, FERTILIZERS, PAINTS, CONCRETE, AND ANY OTHER PRODUCTS USED IN CONSTRUCTION ACTIVITIES.
9. FERTILIZERS WILL BE STORED IN A COVERED SHED AND PARTIALLY USED BAGS WILL BE TRANSFERRED TO A SEALABLE BIN TO AVOID SPILLS.

SEDIMENT TRACK OUT

OPERATOR SHALL UTILIZE ROCK CONSTRUCTION ENTRANCE(S) AND WASH-DOWN STATIONS AS NEEDED TO MINIMIZED OFFSITE TRACKING. THE OPERATOR SHALL, AT THE END OF EACH SHIFT OR MORE FREQUENTLY IF REQUIRED, UTILIZE A STREET CLEANER TO REMOVE ANY ACCUMULATED SEDIMENT.

DUST CONTROL

OPERATOR SHALL USE SUFFICIENT WATER DURING SITE CLEARING AND GRADING ACTIVITIES TO MINIMIZE THE GENERATION OF DUST AND BLOWING SOILS.

PREVENTATIVE MAINTENANCE

SITE INSPECTIONS SHALL BE PERFORMED BY A TRAINED OPERATOR BEGINNING WITH THE INITIAL SITE CLEARING AND GRADING THROUGH THE COMPLETION OF ALL PROJECT ACTIVITIES. UPON INSPECTION OF PROBLEM AREAS, CORRECTIVE ACTION SHALL BE TAKEN WITHIN 24 HOURS. INSPECTION AND CORRECTIVE ACTIONS TAKEN SHALL BE RECORDED BY THE TRAINED OPERATOR AND SHALL BE INCLUDED WITH THE PROJECT FILE. INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 1/2 INCH IN 24 HOURS.

PERMITTEES MUST INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL BMP'S AND POLLUTION PREVENTION MANAGEMENT MEASURES TO ENSURE INTEGRITY AND EFFECTIVENESS. PERMITTEES MUST REPAIR, REPLACE OR SUPPLEMENT ALL NON-FUNCTIONAL BMP'S WITH FUNCTIONAL BMP'S BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY UNLESS ANOTHER TIME FRAME IS SPECIFIED IN SECTION 11.5 OR 11.6 OF THE PERMIT. PERMITTEES MAY TAKE ADDITIONAL TIME IF FIELD CONDITIONS PREVENT ACCESS TO THE AREA.

SPILL PREVENTION AND RESPONSE PROCEDURES

1. ALL VEHICLES ONSITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
2. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED.
3. SPILL KITS WILL BE INCLUDED WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES WILL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.
4. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
5. ALL PAINT CONTAINERS AND CURING COMPOUNDS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM, BUT WILL BE PROPERLY DISPOSED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS OR AGENCY REGULATIONS.
6. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE TEMPORARY MATERIAL STORAGE TRAILER ONSITE. EQUIPMENT WILL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER OR OIL ABSORBENTS, SAND, SAW DUST, OIL ABSORBENT BOOMS AND DIAPERS AND PLASTIC AND METAL TRASH CONTAINERS DEDICATED TO SPILL CLEANUP.
7. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM CONVEYANCE SYSTEM WILL BE REPORTED TO THE MPCA.
8. THE SPILL PREVENTION PLAN SHALL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.
9. SPRAY GUNS WILL BE CLEANED ON A REMOVABLE TARP OR OTHER APPROVED METHOD.
10. CONCRETE TRUCKS WILL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE, UNLESS DONE IN AN ENGINEERED CONTAINMENT SYSTEM.
11. FORM RELEASE OIL USED FOR DECORATIVE STONE OR CONCRETE WORK WILL BE APPLIED OVER A PALLET

COVERED WITH AN ABSORBENT MATERIAL TO COLLECT EXCESS FLUID. THE ABSORBENT MATERIAL WILL BE REPLACED AND DISPOSED OF PROPERLY WHEN SATURATED.

EMPLOYEE TRAINING

THE OPERATOR SHALL PROVIDE PROPER TRAINING AND EDUCATION TO THEIR RESPECTIVE EMPLOYEES AND SUBCONTRACTORS WITH RESPECT TO SPILL RESPONSE PROCEDURES, GOOD HOUSE KEEPING PRACTICES, AND EROSION AND SEDIMENT CONTROL PRACTICES.

CONCRETE GRINDINGS AND SLURRY

OPERATOR SHALL ESTABLISH AND MAINTAIN A CONCRETE WASHOUT AREA THAT WILL NOT ALLOW WASH WATER, GRINDINGS, OR SLURRY TO EXIT THE SITE WASTE MATERIAL FROM THE WASH OUT SHALL BE TRUCKED OFFSITE BY THE OPERATOR AND DISPOSED OF PROPERLY. AT NO TIME SHALL THE WASTE MATERIAL BE USED AS ENGINEERED FILL MATERIAL OR DISPOSED OF IN THE GRADING ACTIVITIES AT THE SUBJECT PROJECT LOCATION.

DEWATERING AND BASIN DRAINING OPERATIONS

THE OPERATOR SHALL EMPLOY APPROPRIATE METHODS TO ENSURE THAT NO SEDIMENT LADEN WATER IS ALLOWED TO INFILTRATE THE EXISTING DRAINAGE SYSTEM AND THAT NO EROSION IS CAUSED BY THE DISCHARGE OF THE DE-WATERING METHODS.

REVISION			
DATE			
NO.			

DRAFTED	JLL
REVIEWED	JJD
PROJECT NUMBER	2416-00827
ISSUE DATE	01/14/2025

EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA
EROSION CONTROL NOTES

CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: JEREMY DEWALD

SIGNATURE:

DATE: 01/14/2025 LICENSE NUMBER: 56225

TITLOW LAKE

EDGE OF WATER AS LOCATED NOVEMBER 18, 2022



LEGEND

- FIBER ROLL - SEE DETAIL 1/C700
- INLET PROTECTION - SEE DETAIL 2/C700
- CONCRETE WASHOUT
CONTRACTOR TO LOCATE AS APPROPRIATE
FOR CONSTRUCTION, DETAIL 3/C700

IMPERVIOUS AREA CALCULATIONS

PRE-CONSTRUCTION	1.28 AC
POST CONSTRUCTION	1.28 AC

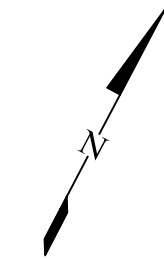
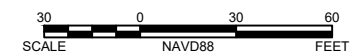
ESTIMATED EROSION CONTROL QUANTITIES

FIBER ROLL	1,191 LF
INLET PROTECTION	2 EA

SWPPP DESIGN CERTIFICATION

- SWPPP DESIGNER
JEREMY DEWALD, PE
DATE OF TRAINING: JUNE 1, 2023
INSTRUCTOR: HUA ZHAO
TRAINING ENTITY: UNIVERSITY OF MINNESOTA
CONTENT OF TRAINING: DESIGN OF CONSTRUCTION SWPPP
- INDIVIDUALS OVERSEEING IMPLEMENTATION OF REVISING AND OR/AMENDING THE SWPPP AND INDIVIDUAL PERFORMING INSPECTIONS OF THE PROJECT. ONE OF THESE INDIVIDUALS MUST BE AVAILABLE FOR AN ON-SITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE MPCA.*
- INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE AND REPAIR OF BMPS.*

*CONTRACTOR TO PROVIDE CERTIFICATION THAT MEETS MPCA CSW PERMIT REQUIREMENTS OF SECTIONS 5.20 AND 21.2 FOR CONTRACT APPROVAL.



CERTIFICATION

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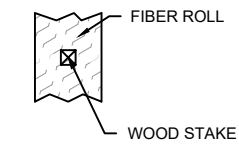
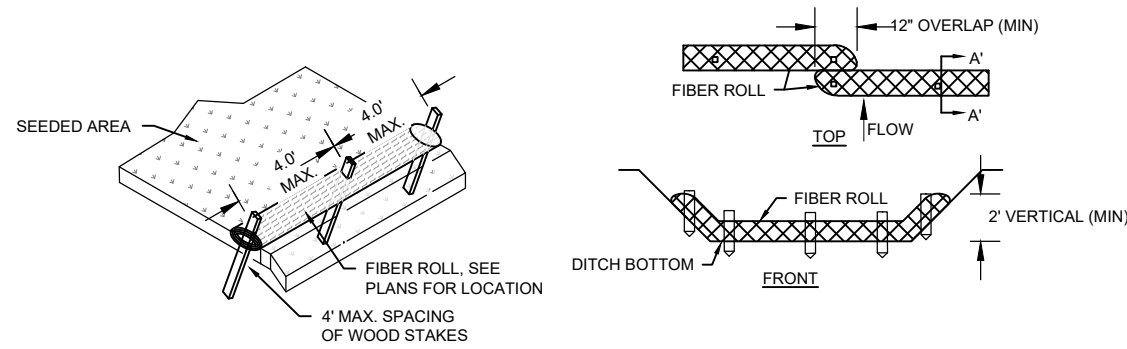
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NO.	DATE	REVISION

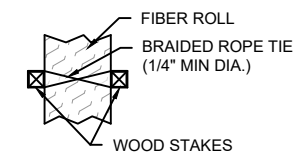
DRAFTED: JLL
REVIEWED: JJD
PROJECT NUMBER: 2416-00827
ISSUE DATE: 01/14/2025

EL NUEVO TRAILER PARK WATER & SEWER REPAIR
EL NUEVO AMANECER COOPERATIVE
GAYLORD, MINNESOTA

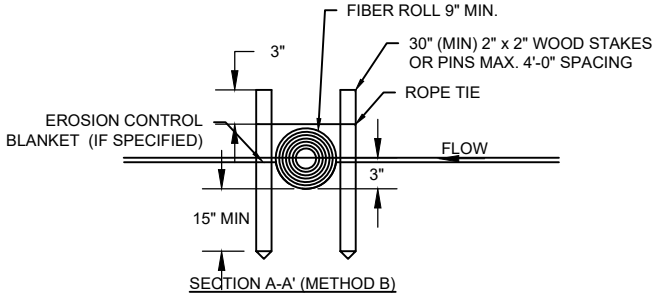
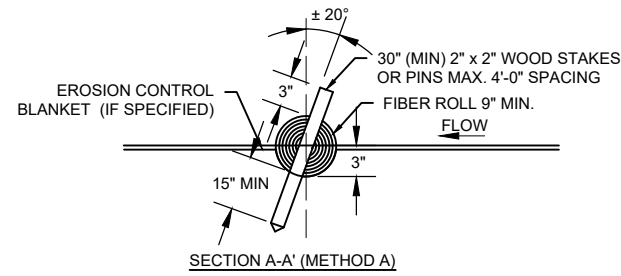
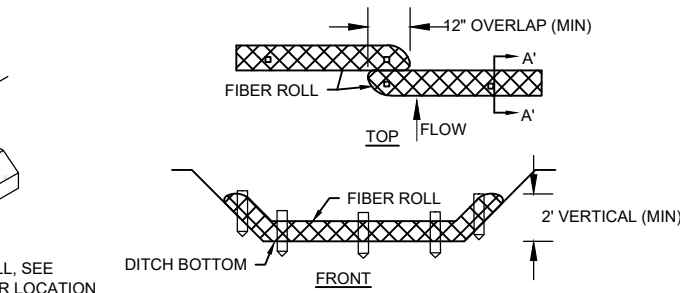
SHEET
C601



INSTALLATION METHOD A

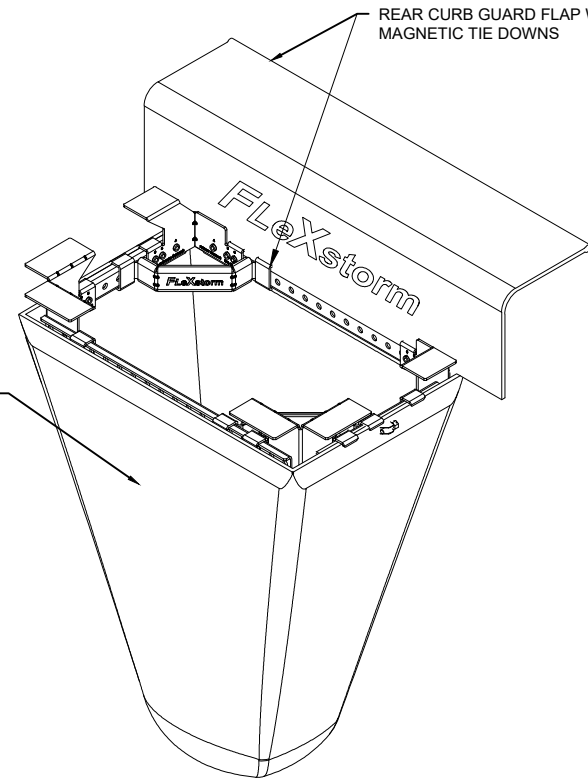


INSTALLATION METHOD B



1 FIBER ROLL INSTALLATION NOT TO SCALE

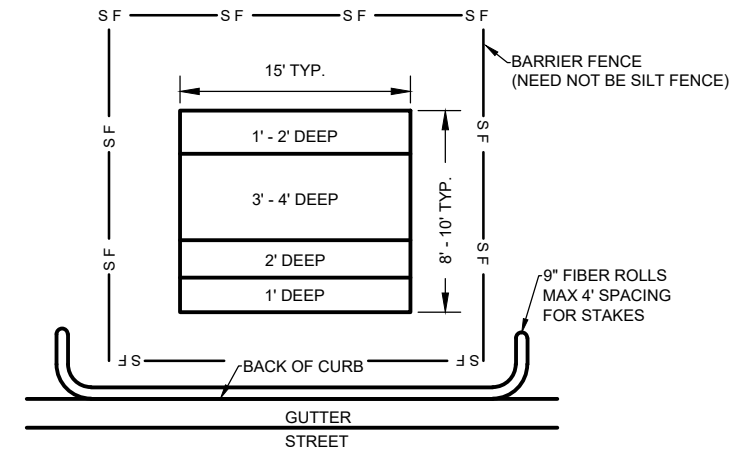
FLEXSTORM COMBINATION INLET FILTER FOR CURB HOODS SIZED TO FIT EXISTING INLETS. SEE MANUFACTURER'S RECOMMENDATIONS.



- NOTES:
- CONTRACTOR SHALL INSTALL INLET PROTECTION INTO ALL STORM INLETS AFTER INLET CONSTRUCTION.

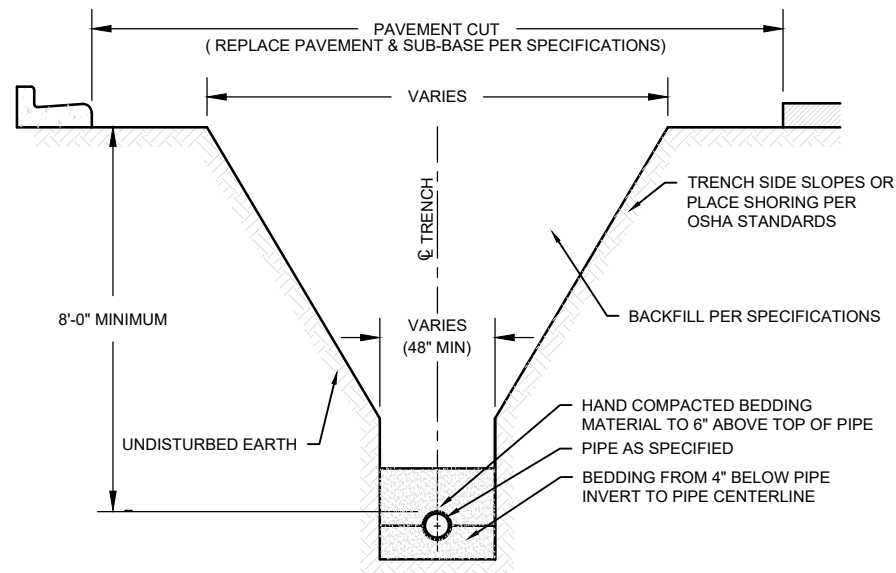
RECTANGULAR INLET PROTECTION

2 INLET PROTECTION NOT TO SCALE

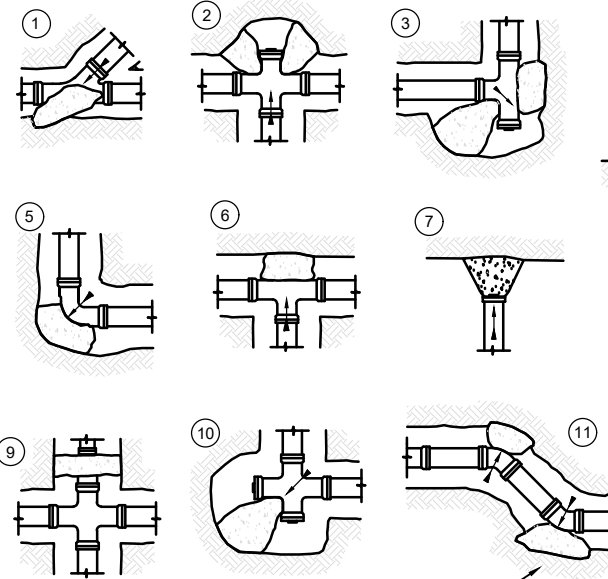


- NOTES:
- CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE WASHOUT AREA AT A LOCATION DETERMINED BY THE CONTRACTOR.
 - OFF-SITE CONCRETE WASHOUT IS ALLOWABLE.

3 CONCRETE WASHOUT NOT TO SCALE



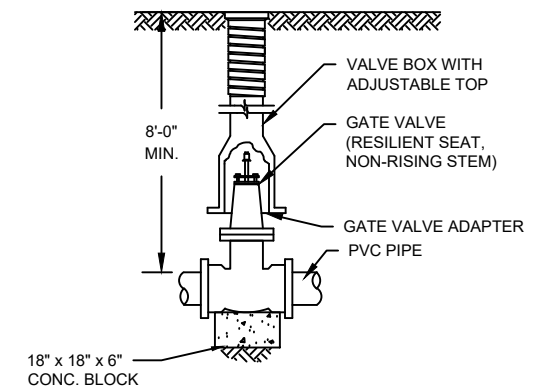
4 TYPICAL WATERLINE TRENCH NOT TO SCALE



REPRESENTS UNDISTURBED GROUND

5 THRUST BLOCKING NOT TO SCALE

- NOTES:
- THRU LINE CONNECTION, WYE
 - THRU LINE CONNECTION, CROSS USED AS TEE
 - DIRECTION CHANGE, TEE USED AS ELBOW
 - VALVE ANCHOR
 - DIRECTION CHANGE, ELBOW
 - THRU LINE CONNECTION, TEE
 - BLOCKING OF PLUG, TO INCLUDE BOND BREAKER
 - DIRECTION CHANGE VERTICAL, BEND ANCHOR
 - CHANGE LINE SIZE, REDUCER
 - DIRECTION CHANGE, CROSS USED AS ELBOW
 - DIRECTION CHANGE



6 GATE VALVE NOT TO SCALE

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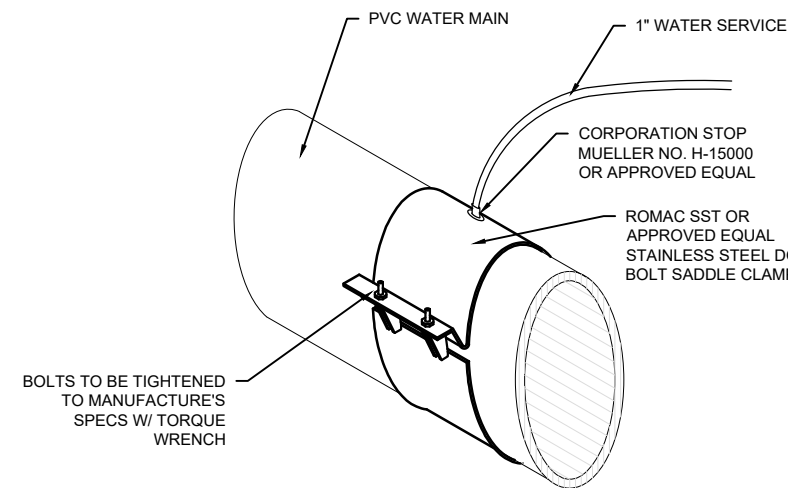
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DATE: 01/14/2025 LICENSE NUMBER: 56225

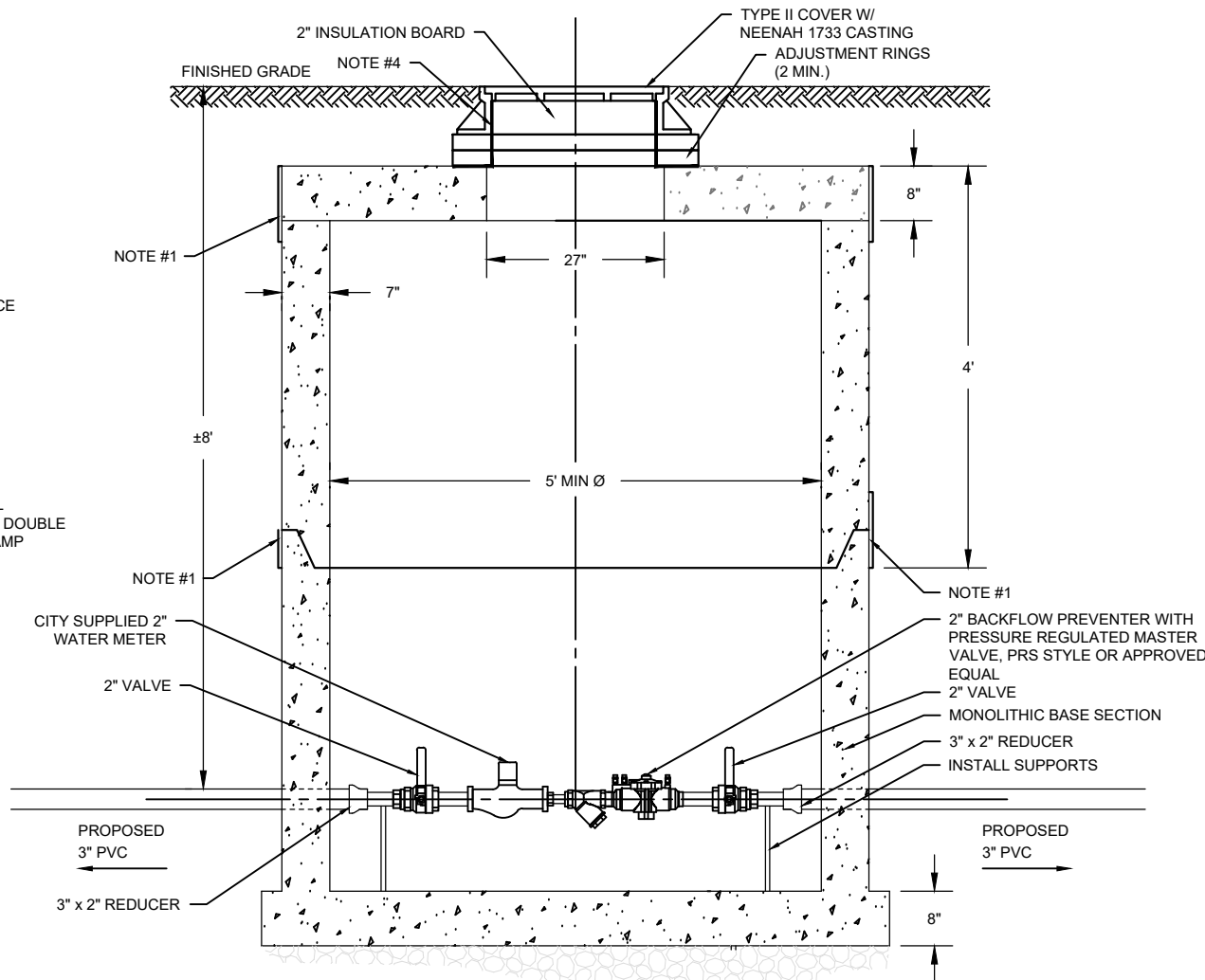
EL NUEVO TRAILER PARK WATER & SEWER REPAIR
 EL NUEVO AMANECER COOPERATIVE
 GAYLORD, MINNESOTA

DETAILS

NO.	DATE	REVISION
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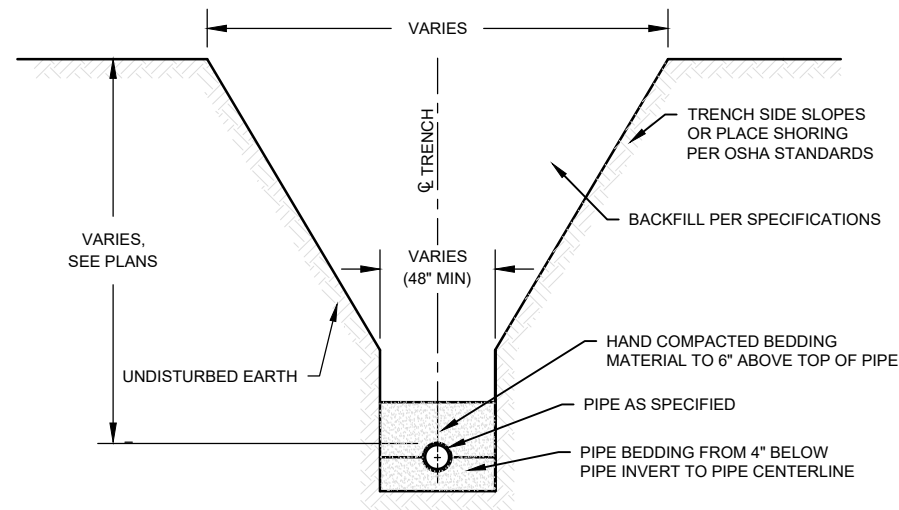


1
C701 TAPPING SADDLE
NOT TO SCALE

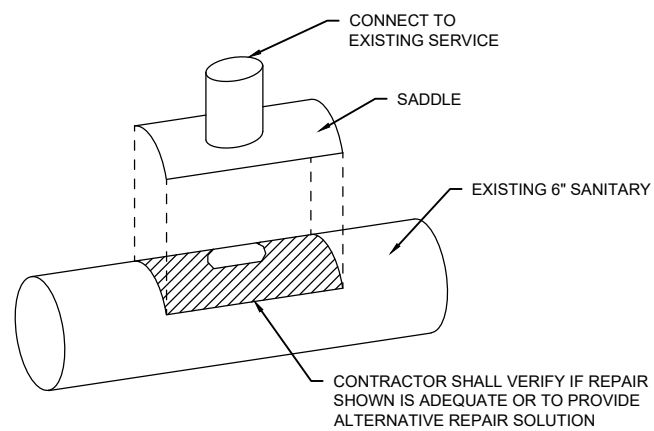


- NOTES:**
1. CONFINED GASKETED JOINT AND EXTERIOR SEAL BY PRESS-SEAL GASKET CORP. EZ WRAP AND EZ STIK NO. 4 PRIMER, MAR MAC CONSTRUCTION PRODUCTS "MAC WRAP", OR AN APPROVED EQUAL.
 2. INSTALL 4" STYROFOAM INSULATION GLUED TO THE BOTTOM OF THE PRECAST COVER.
 3. PIPE PENETRATIONS SHALL BE SEALED WITH RUBBER BOOT.
 4. I&I BARRIER AS MANUFACTURED BY STRIKE PRODUCTS, OR APPROVED EQUAL.

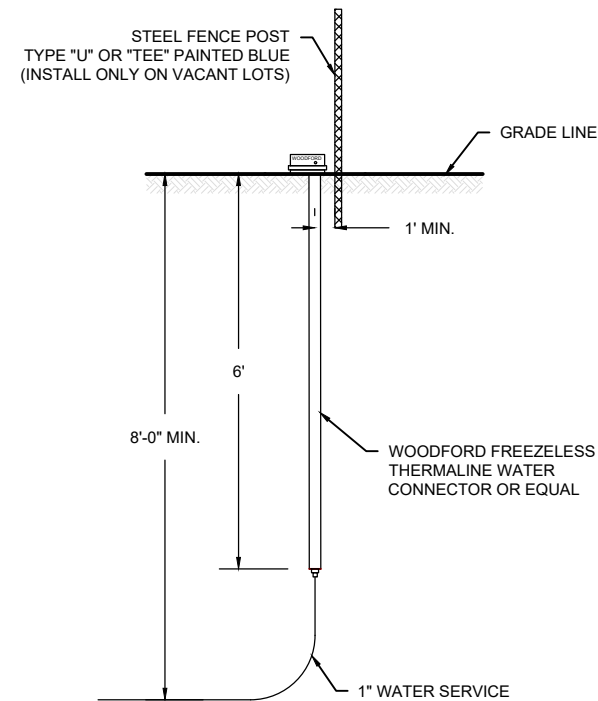
2
C701 WATER MANHOLE
NOT TO SCALE



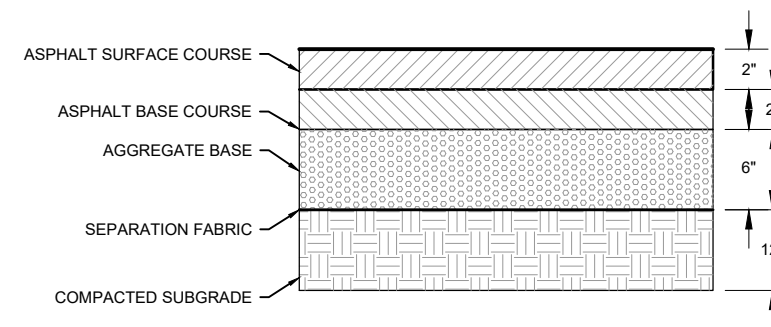
4
C701 HDPE & PVC UTILITY TRENCHING & PIPE BEDDING
NOT TO SCALE



5
C701 PROTRUDING SANITARY SERVICE REPAIR
NOT TO SCALE



3
C701 WATER SERVICE TERMINATION
NOT TO SCALE



6
C701 ASPHALT PAVEMENT SECTION
NOT TO SCALE

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