



Project Manual For:

Open Ditch and Main Tile Improvements

JOINT DRAINAGE DISTRICT NO. 1

STORY & MARSHALL COUNTIES

IOWA

2015

Project No. 13-16319

I+S GROUP

PROJECT MANUAL

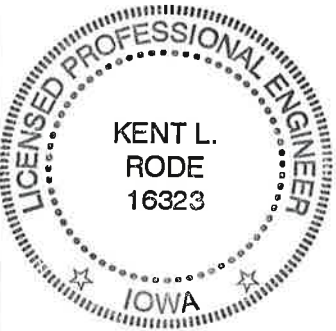
OPEN DITCH AND MAIN TILE IMPROVEMENTS

JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL COUNTIES, IOWA

2015

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 KENT L. RODE 16323	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.  Kent L. Rode, P.E.3-13-15 Date License No.: 16323 My License Renewal Date is December 31, 2015 <u>Sections covered by this seal:</u> All Sections Listed in the Table of Contents
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**PROJECT MANUAL
FOR
OPEN DITCH AND MAIN TILE IMPROVEMENTS
JOINT DRAINAGE DISTRICT NO. 1
STORY & MARSHALL COUNTIES, IOWA
2015**

PROJECT NO. 13-16319

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PROCUREMENT AND CONTRACTING REQUIREMENTS

NOTICE TO BIDDERS
NOTICE OF PUBLIC HEARING AND LETTING

Sealed bids will be received at the office of the Auditor of Story County at 900 Sixth Street Nevada, Iowa on the 16th of April, 2015 before 2:00 p.m. for the furnishing of materials and construction of Open Ditch and Main Tile Improvements, Joint Drainage District No. 1 in Story and Marshall Counties, Iowa. At the above time and place all bids received by the Auditor of Story County will be opened and publicly read with the results being reported to the Board of Supervisors of Story and Marshall Counties at their meeting on April 22nd, 2015 at 6:30 p.m. at which time the Joint Board of Supervisors may take action on the proposals submitted or at such time as may then be fixed.

Notice is hereby given that the Board of Supervisors of Story and Marshall Counties will meet at the State Center City Hall, 118 East Main Street, State Center, Iowa on the 22nd day of April, 2015, at 6:30 p.m., at which time and place a hearing will be held on the proposed plans and specifications, form of contract and estimate of cost for the furnishing of materials and construction of Open Ditch and Main Tile Improvements, Joint Drainage District No. 1 in Story and Marshall Counties. Any interested person may appear at said hearing and file objections to the proposed plans, specifications, form of contract and estimated costs for said improvements.

The general description of types of construction and their limits for which bids will be received shall be as follow:

1. Open Ditch Excavation
2. Clearing and Grubbing
3. Spoil Bank Leveling – Two Sides
4. Corrugated Metal Pipe Surface Drains
5. CMP Tile Extensions
6. 42" Reinforced Concrete Pipe, Class 3
7. Tile Connections to Main Tile
8. Steel Drop Structure
9. Class "E" Riprap
10. Seed and Fertilize Open Ditch
11. Mulch Open Ditch
12. Associated Work and Miscellaneous Items Related Thereto

A more detailed description of the kinds and approximate quantities of materials and types of construction for which bids will be received are set forth in the Bid Form included in the project manual prepared by I+S Group, Inc. of Algona, Iowa, which, together with the proposed form of contract, have heretofore been approved by the Joint Board, and are now on file for public examination in the office of the Story and Marshall County Auditors, and are by this reference made part hereof as though fully set out and incorporated herein.

The Joint Board of Supervisors reserve the right to waive any and all technicalities and/or irregularities, to reject any and all bids, to reject bids that they find to be unbalanced between bid items and to defer acceptance of any bid for a period not to exceed thirty-five (35) calendar days from the date of letting. Bids will be received to complete all parts of the proposed project which work will be covered under one contract.

Each bid shall be in writing on a form furnished by the Drainage District; must be filed with the Auditor in a sealed envelope plainly identified and addressed to the Auditor, Story County, Iowa and must be accompanied by a bid security in a separate sealed envelope. The bid security shall be a bid bond of the form specified in the Bidding Information and Contract Forms. The bid security shall be made payable to the Auditor or their order, at their office; in an amount equal to five percent (5%) of the bid. The bid security must not contain any conditions either in the body or as an endorsement thereon. The bid security of the successful bidder will be held as a guarantee and not returned until after he has entered into a contract in accordance with his bid. Such bid security shall be forfeited to the Joint Drainage

District as liquidated damages in the event the successful bidder fails or refuses to enter into a contract within fifteen (15) days after receipt of notice of award of the contract.

The successful bidder shall be required to execute bonds with sureties approved by the Auditor in favor of Story County for the use and benefit of Joint Drainage District No.1 and all persons entitled to liens for labor or material in an amount equal to one hundred percent (100%) of the contract price of the work to be done; conditioned for the timely, efficient, and complete performance of the contract; and the payment, as they become due, of all just claims for labor performed and material used in carrying out the contract. All conditions of these bonds shall conform with those of the forms of bonds included in the Bidding Information and Contract Forms and shall remain in effect until one year after the date of final acceptance of the work by the Joint Board of Supervisors.

Payment for work done will be in accordance with estimates approved monthly by the Engineer and in Drainage Warrants issued by the Drainage District, which, if registered and stamped "not paid for want of funds", shall bear interest at a rate fixed by the Board, not to exceed the maximum set by law in accordance with Chapter 468 of the Code of Iowa, as amended.

Progress payments will be made in an amount equal to ninety percent (90%) of the work completed. Final payment will be made not less than thirty (30) days after completion of the work and acceptance by the Board, subject to the conditions and in accordance with the provisions of Chapter 468 of the Code of Iowa, as amended.

The work shall be completed on or before November 1, 2015. Liquidated damages in the amount of two hundred fifty dollars (\$250.00) per calendar day will be assessed the Contractor for each day that the work shall remain uncompleted after the end of the contract period with due allowance for extensions of the contract period due to conditions beyond the control of Contractor.

By virtue of statutory authority, a preference will be given to products and provisions grown and coal produced within the State of Iowa.

In accordance with Iowa Statutes, a resident bidder shall be allowed a preference as against nonresident bidder from a state or foreign country if that state or foreign country gives or requires any preference to bidders from that state or foreign country, including but not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident. Failure to submit a fully completed Bidder Status Form with the bid may result in the bid being deemed nonresponsive and rejected.

Copies of plans and specifications governing the construction of the proposed improvements and the form of contract are now on file in the office of the Story and Marshall Counties, Iowa for examination by prospective bidders. Copies may be obtained from the Engineer for the project, I+S Group, Inc., 1609 U.S. Hwy 18 East, Algona, Iowa 50511, (515)-295-2980, upon deposit of one hundred dollars (\$100.00) which shall be refunded upon the return of the plans and specifications within fourteen (14) days after award of the contract. If the plans and specifications are not returned in a reusable condition and within fourteen days after award of the contract, the deposit shall be forfeited. The plans and specifications may also be downloaded from the I+S Group website at is-grp.com for a non-refundable fee of \$10.

This notice is given by order of the Joint Board of Supervisors of Story and Marshall Counties acting as Trustees for Joint Drainage District No. 1, Story and Marshall Counties, Iowa.

Lucy Martin,
Story County Auditor

Deanne Raymond,
Marshall County Auditor

**Notice to Bidders
Notice of Hearing and Letting**

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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. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - B. *Bidder* - The individual or entity who submits a Bid directly to OWNER.
 - C. *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.

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 Issuing Office. The deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in a reusable condition within 14 days after award of the project. If the Bidding Documents are not returned within 14 days after award of the project and in a reusable condition, the deposit shall be forfeited.
- 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 (5) 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. Evidence of Bidder's authority to do business in the state where the Project is located.
 - B. The address and description of the Bidder's place of business.
 - C. The number of years engaged in the contracting business under the present firm name, and the name of the state where incorporated.
 - D. A list of the property and equipment available to the Bidder to evaluate if the bidder can complete the Work in accordance with the Bidding Documents.
 - E. A financial statement of the bidder showing that the Bidder has the financial resources to meet all obligations incidental to the Work.
 - F. The Bidder's performance record giving the description, location, and telephone numbers of similar projects constructed in a satisfactory manner by the Bidder.
 - G. A list of projects presently under contract, the approximate contract amount, and percent of completion of each.
 - H. A list of contracts which resulted in lawsuits.
 - I. A list of contracts defaulted.
 - J. A statement of the Bidder indicating whether or not the Bidder has ever filed bankruptcy while performing Work of like nature or magnitude.
 - K. A list of officers of the firm who, while in the employ of the firm or the employ of previous firms, were associated with contracts which resulted in lawsuits, contracts defaulted or filed for bankruptcy.
 - L. The technical experience of personnel guaranteed to be employed in the responsible charge of the Work stating whether the personnel have or have not performed satisfactorily on other contracts of like nature and magnitude or comparable difficulty at similar rate of progress.
 - M. Such additional information as will assist OWNER in determining whether the Bidder is adequately prepared to fulfill the contract.
 - N. If Owner desires to prequalify bidders, the information listed above and other information shall be submitted within the specified time for the Owner to review. If the information requested by Owner is not submitted in the designated time frame, the firm will not be eligible for prequalification.
- 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 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.
- 4.07 *It is the responsibility of each Bidder before submitting a Bid to:*
- A. Examine and carefully study the Bidding Documents including addenda, 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 (if any) 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 or contiguous to 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 _____ [a.m.][p.m.] local time on _____ at _____. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are [required] [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 5 percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the

Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may 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 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

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

ARTICLE 9 – CONTRACT TIMES

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

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Time Extensions: Application for extension of time shall be made by the Contractor to the Owner in writing and shall state reasons for the request for the extension of time. No extension of time shall be valid unless it is requested in writing by the Contractor nor shall an extension of time be valid unless it is given in writing by the Owner.
- 10.02 Damages for Breach of Contract: In the event of Contractor's breach of or failure to perform the contract within the specified period, time being of the essence of this contract, the Contractor shall be liable to the Owner for all reasonable damages arising from the breach or failure to perform. Such reasonable damages shall include, but shall not be limited to, the following:
- A. Attorneys' fees incurred in responding to the breach.
 - B. Additional contract management or supervision expenses arising from the breach.
 - C. Accounting fees and expenses arising from the breach.
 - D. Damages for loss of or delayed access, and loss of or delayed use of the project.
 - E. Reasonable costs of the Owner's staff time necessary in responding to the breach.
 - F. Lost or delayed grants or loans applicable to the project.
 - G. Costs incurred in curing the breach, completing the project or repairing defective work.
 - H. Additional interest expense.
 - I. Additional engineering fees and expenses arising from the breach.
- 10.03 Time of Completion and Liquidated Damages: If the Contractor fails to substantially complete the work covered by this project by the specified completion date, or by the extended completion date as authorized in writing by the Owner, it is acknowledged and agreed that the Owner will suffer loss and damages. In the event of a failure to timely complete the project, such loss or damages shall be determined pursuant to the preceding section, "Damages for Breach of Contract", however, if the Owner sustains damages arising from the Contractor's failure to complete the project by the completion date, which are difficult or impossible to determine with reasonable certainty, the Owner and Contractor agree that as liquidated damages for the delay (but not as a penalty), the Contractor shall pay to the Owner the sum of \$250.00 for each day that expires after the completion date, until the work is substantially completed. The Owner and Contractor agree that this sum is a reasonable and fair estimation of additional damages to be sustained by the Owner arising from the Contractor's failure to timely complete the project, given the nature and size of the project.
- 10.04 Attorney Fees and Court Costs: In the event the Owner commences a legal proceeding against the Contractor in which the Contractor is found to have breached this contract, it is agreed that the Owner shall be entitled to recover from the Contractor, in addition to all damages awarded, reasonable attorney fees and court costs.

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 without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

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 Bid item, alternative, adjustment unit price item, and/or 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 shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 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.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

- 14.01 *Lump Sum Items on Bid Form*
- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.
1. Bidders may submit a Bid for any of the separate sections or any combination of sections as provided in the Bid Form. Submission of a Bid on any section signifies Bidder's willingness to enter into a Contract for that section alone at the price offered.
 2. Bidders offering a Bid on one or more sections shall be capable of completing the Work within the time period stated in the Agreement.
- 14.02 *Unit Price Items on Bid Form*
- 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.

14.03 *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.

14.04 *Completion Time Comparisons (if provided for in the Bid Form)*

- A. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9 above.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security.
- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. 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."

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 publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work 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 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 and insurance certificates.

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. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SALES AND USE TAXES

22.01 Owner is exempt from Iowa state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph 6.10 of the Supplementary Conditions for additional information.

ARTICLE 23 – RETAINAGE

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

BID FORM
OPEN DITCH AND MAIN TILE IMPROVEMENTS
JOINT DRAINAGE DISTRICT NO. 1
STORY & MARSHALL COUNTIES, IOWA
2014

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

**Board of Supervisors of Storey & Marshall Counties
Auditor's Office
900 Sixth Street
Nevada, IA 50201**

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 35 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:

Addendum No.

Addendum Date

_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all 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.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

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):

5.02 BID SCHEDULE

ITEM NUMBER	ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	EXTENSION
1	CLASS 10 EXCAVATION	CY	1,100		
2	OPEN DITCH EXCAVATION	CY	10,700		
3	SPOIL BANK LEVELING - TWO SIDES	STA	31.6		
4	CORRUGATED METAL PIPE SURFACE DRAIN, 15" DIA.	LF	180		
5	CORRUGATED METAL PIPE SURFACE DRAIN, 18" DIA.	LF	105		
6	CORRUGATED METAL PIPE SURFACE DRAIN, 24" DIA.	LF	90		
7	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 15" DIA.	EA	4		
8	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 18" DIA.	EA	2		
9	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 24" DIA.	EA	2		
10	CORRUGATED METAL PIPE TILE EXTENSION, 12" DIA.	LF	60		
11	CORRUGATED METAL PIPE TILE EXTENSION, 15" DIA.	LF	60		
12	CORRUGATED METAL PIPE TILE EXTENSION, 18" DIA.	LF	60		
13	REINFORCED CONCRETE PIPE, 42" DIA., CLASS 3	LF	5,171		
14	REINFORCED CONCRETE PIPE, 27" DIA., CLASS 3	LF	70		
15	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	15		
16	IDOT SW-401 CIRCULAR STORM SEWER MANHOLE, 84" DIAMETER	EA	1		
17	42" DIAMETER, R.C.P. ELBOW SECTION, FABRICATION ONLY	EA	11		
18	GRADE CONTROL STRUCTURE EXCAVATION AND SHAPING	LS	1		
19	CRUSH IN PLACE AND BURY EXISTING MAIN TILE	LF	5,200		
20	REMOVAL OF EXISTING HEADWALL	LS	1		
21	RIPRAP, IDOT CLASS E	TN	215		
22	GEOTEXTILE FABRIC	SY	350		
23	SPOT TILE EXPLORATION	HR	15		
24	CLEARING AND GRUBBING	LS	1		
25	SEED AND FERTILIZE OPEN DITCH	STA	31.6		
26	MULCH OPEN DITCH	STA	31.6		
27	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	350		
28	SILT FENCE	LF	300		
29	REMOVAL OF SILT FENCE	LF	300		
30	FENCE CUTS	EA	2		
31	MOBILIZATION	LS	1		
BID TOTAL					

- 5.03 Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.
- 5.04 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 completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions and SC-14.07 of the Supplementary Conditions on or before November 1, 2015.
- 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:
- 7.02 Required Bid security in the form of _____.
- 7.03 Required Bidder Status 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.

ARTICLE 9 – 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 Iowa is ____/____/____.

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____. *[If applicable]*

BID BOND

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

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name and Include Location*):

BOND

Bond Number:

Date (*Not earlier than Bid due date*):

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER**SURETY**

Bidder's Name and Corporate Seal (Seal) _____
Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

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

Bidder Status Form

To be completed by all bidders

Part A

Please answer "Yes" or "No" for each of the following:

- ☐ Yes ☐ No My company is authorized to transact business in Iowa.
(To help you determine if your company is authorized, please review the worksheet on the next page).
- ☐ Yes ☐ No My company has an office to transact business in Iowa.
- ☐ Yes ☐ No My company's office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.
- ☐ Yes ☐ No My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.
- ☐ Yes ☐ No My company is not a subsidiary of another business entity or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.

If you answered "Yes" for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.

If you answered "No" to one or more questions above, your company is a nonresident bidder. Please complete Parts C and D of this form.

To be completed by resident bidders

Part B

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: ____ / ____ / ____ to ____ / ____ / ____ Address: _____
City, State, Zip: _____

Dates: ____ / ____ / ____ to ____ / ____ / ____ Address: _____
City, State, Zip: _____

Dates: ____ / ____ / ____ to ____ / ____ / ____ Address: _____
City, State, Zip: _____

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders

Part C

1. Name of home state or foreign country reported to the Iowa Secretary of State:

2. Does your company's home state or foreign country offer preferences to bidders who are residents? ☐ Yes ☐ No

3. If you answered "Yes" to question 2, identify each preference offered by your company's home state or foreign country and the appropriate legal citation.

You may attach additional sheet(s) if needed.

To be completed by all bidders

Part D

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be a reason to reject my bid.

Firm Name: _____

Signature: _____

Date: _____

**You must submit the completed form to the governmental body requesting bids
per 875 Iowa Administrative Code Chapter 156.**

This form has been approved by the Iowa Labor Commissioner.

Worksheet: Authorization to Transact Business

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

- ☐ Yes ☐ No My business is currently registered as a contractor with the Iowa Division of Labor.
- ☐ Yes ☐ No My business is a sole proprietorship and I am an Iowa resident for Iowa income tax purposes.
- ☐ Yes ☐ No My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.
- ☐ Yes ☐ No My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.
- ☐ Yes ☐ No My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa secretary of state, has filed its most recent biennial report with the secretary of state, and has neither received a certificate of withdrawal from the secretary of state nor had its authority revoked.
- ☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.
- ☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.
- ☐ Yes ☐ No My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state, and has not filed a statement of termination.
- ☐ Yes ☐ No My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.
- ☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.
- ☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

NOTICE OF AWARD

Date: _____

Project: _____

Owner: _____

Owner's Contract No.: _____

Contract: _____

Engineer's Project No.: _____

Bidder: _____

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

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

[Indicate total Work, alternates, or sections of Work awarded.]

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

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [_____] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

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 ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

Owner
By: _____
Authorized Signature

Title

Copy to Engineer

**FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between _____ (“Owner”) and

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:

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:

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by **I+S Group**, 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*

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 *Date for Completion and Final Payment*

The Work shall be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions and Paragraph SC-14.07 of the Supplementary Conditions.

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 \$200.00 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 for all Work, at the prices stated in Contractor’s Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment on or about the 15th day of 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 Completion, progress payments will be made in an amount equal to 90 percent of the work completed, 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.

Final Payment

- B. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions and Paragraph SC-14.07 of the Supplementary Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraphs 14.07 and SC-14.07.
- 6.03 Payments in accordance with paragraphs 6.02 and 6.03 shall be in cashable and/or stamped interest bearing Drainage Warrants drawn in favor of Contractor on the drainage funds of the Drainage District and/or in Drainage Improvement Certificates.
- A. Drainage Warrants
 1. Drainage Warrants, if stamped "not paid for want of funds", shall bear interest at a rate fixed by Owner not to exceed the maximum set by law in accordance with Chapter 468 of the Code of Iowa, as amended.
 - B. Improvement Certificates
 1. Owner may issue Drainage Improvement Certificates payable to bearer or Contractor in payment or part payment of the Work. Owner may require Contractor or bearer to exchange outstanding Drainage Warrants at face value, together with accrued interest, for Drainage Improvement Certificates. Each of such certificates shall state the amount of one or more drainage assessments or part thereof made against a property in the district, designating it and the owner thereof liable for the payment of such assessments. Said certificates shall be negotiable and transfer to the bearer all right and interest in and to the tax in every such assessment or part thereof described in such certificates, and shall authorize such bearer to collect and receive every assessment embraced in said certificate by or through any of the methods provided by law for their collection as the same mature. Such certificates shall bear interest at a rate fixed by Owner not exceeding the maximum set by law in accordance with Chapter 468 of the Code of Iowa, as amended; interest payable annually; and shall be paid by the taxpayer to the County Treasurer, who shall receipt for the same and cause the amount to be credited on the certificates issued therefore.

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 same per annum rate as the stamped drainage warrants used in payment. If stamped drainage warrants are not used in payment then the rate shall be 3% plus the Wall Street Journal prime rate on the Effective Date of the Agreement.

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.
- J. Contractor shall have executed the Construction Contract and submitted his work schedule on or before _____, ____.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to __, inclusive).
 - 2. Performance bond (pages __ to __, inclusive).
 - 3. Payment bond (pages __ to __, inclusive).
 - 4. Notice to Bidders.
 - 5. Notice of Award.
 - 6. General Conditions (pages __ to __, inclusive).
 - 7. Supplementary Conditions (pages __ to __, inclusive).
 - 8. Specifications as listed in the table of contents of the Project Manual.
 - 9. Drawings consisting of _ sheets with each sheet bearing the following general title:
 - 10. Addenda (NA)
 - 11. 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).
 - 12. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Work Change Directives.
 - b. 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 any thing 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

- A. This Agreement is prepared in accordance with Chapter 468 of the 2010 Code of Iowa, as amended. Owner and Contractor agree that in the event provisions of this Agreement do not comply with requirements of Chapter 468 of the 2010 Code of Iowa, as amended, the provisions of the latter shall prevail.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in triplicate. Counterparts have been delivered to Owner, Contractor and Engineer. 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:

CONTRACTOR:

_____	_____
By: _____	By: _____
Title: _____	Title: _____

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

Attest: _____	Attest: _____
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:

PERFORMANCE BOND

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

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.
5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:
 - 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
 - 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
 - 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.
6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.
7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.
8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or

fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*)

Surety Agency or Broker:

Owner's Representative (*Engineer or other party*):

PAYMENT BOND

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

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. Reserved.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.
8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.
9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.

The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

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

FOR INFORMATION ONLY – (*Name, Address, and Telephone*)

Surety Agency or Broker:

Owner's Representative (*Engineer or other*):

Contractor's Application for Payment No. 1

To: _____ (Owner)
From: _____ (Contractor)
Project: _____
Owner's Contract Number: _____ Engineer's Project Number: _____
For Work on project accomplished through the date of: _____

1	Original Contract Price:	_____
2	Net Change by Change Orders:	_____
3	Current Contract Price (1 plus 2):	_____
4	Total completed work to date (from Page 2):	_____
5	Total materials stored to date (if applicable):	_____
6	Retainage (per Contract)	_____
	10% of completed work:	_____
	10% of stored material:	_____
	Total Retainage:	_____
7	Total completed work and materials to date less retainage (4 plus 5 minus 6):	_____
8	Less previous Payments:	_____
9	AMOUNT DUE THIS APPLICATION (7 minus 8)	_____

Accompanying Documentation: None

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of Work done under

The undersigned Contractor certifies that to the best of its knowledge: (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 Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrance); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective.

Dated: _____

Contractor
By: _____
Title: _____

Payment of the above AMOUNT DUE THIS APPLICATION is recommended:

Dated: _____

I+S Group Inc.
Engineer
By: _____
Title: _____

Payment of the above AMOUNT DUE THIS APPLICATION approved and made:

Dated: _____

Owner
By: _____
Title: _____

1

[illegible]

Application for Payment

2

[illegible]

* Includes all change orders issued to date as scheduled on the following page.

Application for Payment

3

Approved Change Order Summary

NO.	DESCRIPTION	DATE	ADDITIONS	DEDUCTIONS
	None			
SUBTOTALS:				

NET CHANGE BY CHANGE ORDERS:

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

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

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:
Original Contract Price: \$ _____	Original Contract Times: ☐ Working days ☐ Calendar days Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: Substantial completion (days): _____ Ready for final payment (days): _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial completion (days or date): _____ Ready for final payment (days or date): _____

RECOMMENDED: By: _____ Engineer (Authorized Signature) Date: _____ Approved by Funding Agency (if applicable): _____	ACCEPTED: By: _____ Owner (Authorized Signature) Date: _____	ACCEPTED: By: _____ Contractor (Authorized) Date: _____ Date: _____
---	--	--

A. GENERAL INFORMATION

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

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

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

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

B. COMPLETING THE CHANGE ORDER FORM

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

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

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

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:

Owner:

Owner's Contract No.:

Contract:

Engineer's Project No.:

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

☐ All Work under the Contract Documents:

☐ The following specified portions of the Work:

Date of Substantial Completion

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

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

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

☐ Amended Responsibilities

☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

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

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

_____ Executed by Engineer	_____ Date
_____ Accepted by Contractor	_____ Date
_____ Accepted by Owner	_____ Date

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

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

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

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

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

1.02 Terminology

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

B. *Intent of Certain Terms or Adjectives:*

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

C. *Day:*

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

D. *Defective:*

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

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

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

2.02 *Copies of Documents*

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

2.03 *Commencement of Contract Times; Notice to Proceed*

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

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

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.07 *Initial Acceptance of Schedules*

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

Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

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

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

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

3.02 *Reference Standards*

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

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 therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 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 therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

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

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

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

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

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

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 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 therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

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

5.02 *Licensed Sureties and Insurers*

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

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

5.03 *Certificates of Insurance*

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

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

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

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
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 therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

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

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 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 therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

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

- 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 employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

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

required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

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

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

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

7.02 *Coordination*

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

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

7.03 *Legal Relationships*

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

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

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

8.12 *Compliance with Safety Program*

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

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

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

9.02 *Visits to Site*

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

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

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

9.03 *Project Representative*

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

9.04 *Authorized Variations in Work*

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

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

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

9.07 *Determinations for Unit Price Work*

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

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

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

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise

or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

9.10 *Compliance with Safety Program*

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

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

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

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 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 therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

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

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

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

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

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

13.06 *Correction or Removal of Defective Work*

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

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

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

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 therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

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

14.02 *Progress Payments*

A. Applications for Payments:

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

- involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
- b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

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

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - 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 therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

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

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 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 therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. *Application for Payment:*

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

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

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

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

C. Payment Becomes Due:

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

14.08 *Final Completion Delayed*

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

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 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 therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 - 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's repeated disregard of the authority of Engineer; or
 - 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 - 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 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.

SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

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.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01.A.19. *Engineer*

Add the following language at the end of paragraph 1.01.A.19:

Whenever the word Architect is used in the Specifications, it shall have the same meaning as the word Engineer as defined.

SC-1.01.A.36. *Resident Project Representative*

Delete paragraph 1.01.A.36. in its entirety and insert the following in its place:

36. *Resident Project Representative* -- The authorized representative of Owner who may be assigned to the site or any part thereof.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01.B. *Evidence of Insurance*

Delete paragraph 2.01.B. in its entirety insert the following in its place:

B. When Contractor delivers the Agreement to Owner, Contractor shall also deliver to Owner, with a copy to Engineer, certificates of insurance (and other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with Article 5.

SC-2.02.A. *Copies of Documents*

Amend the first sentence of paragraph 2.02.A. to read as follows:

A. Owner shall furnish to Contractor up to five copies of the Contract Documents.

SC-2.05.A.3 *Preliminary Schedule of Values*

Add the following language at the beginning of the first sentence of paragraph 2.05.A.3:

except for Unit Price Work,

SC-2.06. *Preconstruction Conference; Designations of Authorized Representatives*

SC-2.06.B. Delete paragraph 2.06.B in its entirety, insert the following in its place:

B. The conference will be held at a location selected by OWNER. The conference shall be attended by:

1. Contractor's Office Representative.

2. Contractor's Resident Superintendent.

3. Any Subcontractors' or suppliers' representatives whom CONTRACTOR may desire to invite or ENGINEER may request.

4. Owner's Representatives.

5. Local Utilities Representatives.

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

SC-4.06 *Hazardous Environmental Condition at Site*

Add the following sentence at the end of paragraph 4.06.A:

No reports or drawings related to Hazardous Environmental Conditions are known to the OWNER or ENGINEER.

ARTICLE 5 – BONDS AND INSURANCE

SC-5.01.C. *Performance, Payment and Other Bonds*

Add the following language at the end of paragraph 5.01.C:

No further progress payments under the Agreement will be made by Owner until Contractor complies with the provisions of this paragraph.

SC-5.04. *Contractor's Insurance*

SC-5.04.B. Delete paragraph 5.04.B.4. in its entirety.

SC-5.04.C. Add the following new paragraph immediately after paragraph 5.04.B:

C. The limits of liability for the insurance required by paragraph 5.04. 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 5.04.A.2:

- a. State: Statutory
- b. Applicable Federal (e.g. Longshoreman's): Statutory
- c. Employer's Liability: \$500,000.00 per occurrence

2. Contractor's Liability Insurance under paragraphs 5.04.A.3. through 5.04.A.6. which shall also include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

a. Bodily Injury and Property Damage (including completed operations and products liability):

Combined single limit of: \$500,000.00
with an annual aggregate of: \$1,000,000.00

b. Personal Injury

Annual Aggregate: \$1,000,000.00

c. Property Damage liability insurance will provide explosion, collapse and underground coverages:

3. Automobile Liability under paragraph 5.04.A.6:

a. Bodily Injury and Property Damage

Combined single limit of: \$500,000.00
with an annual aggregate of: \$1,000,000.00

SC-5.06. *Property Insurance*

SC-5.06.A. Delete Paragraph 5.06.A. in its entirety and insert the following in its place:

A. Contractor shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof subject to a maximum deductible of one thousand dollars (\$1,000.00). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, Engineer, Engineer's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, false work and Work in transit and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake,

collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils 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 in transit for incorporation in the Work or 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 thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

SC-5.06.B Delete paragraph 5.06.B. in its entirety and insert the following in its place:

B. The policies of insurance required to be purchased and maintained by Contractor in accordance with this paragraph 5.06. shall comply with the requirements of SC-5.08.

SC-5.06.C Delete paragraph 5.06.C. in its entirety and insert the following in its place:

C. All the policies of insured (or the certificates or other evidence thereof) required to be purchased and maintained by Contractor in accordance with paragraphs 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 thirty days prior written notice has been given to Owner by certified mail and will contain waiver provisions in accordance with paragraph 5.07.

SC-5.06.D. Amend the second sentence of paragraph 5.06.D. by striking out the following words:

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.

and as so amended paragraph 5.06.D. remains in effect.

SC-5.06.E. Delete paragraph 5.06.E in its entirety.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

SC-6.06. *Concerning Subcontractor's, Suppliers and Others*

SC-6.06.C. Add the following sentence at the end of paragraph 6.06.C:

Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, evidence of amounts paid to Contractor in accordance with Contractor's Applications for Payment.

SC-6.10. *Taxes*

SC-6.10.B. Add the following new paragraph immediately after Paragraph 6.10.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of Iowa and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

C. Contractor shall furnish Owner with statements certifying payment of any sales, use or excise tax and such other tax refund as provided by applicable law. Such statements and documents shall be furnished to Owner in duplicate before final payment on the Contract is made to Contractor, or at earlier times if so directed by Owner.

SC-6.17. *Shop Drawings and Samples*

Delete section 6.17. in its entirety and insert the following paragraphs in its place:

6.17. *Shop Drawings and Samples*

A. After checking and verifying all field measurements and after complying with applicable procedures specified in the Supplementary Conditions and General Conditions, Contractor shall submit to Engineer for review and action in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.07.), or for other appropriate action if so indicated in the Supplementary Conditions, seven (7) copies (unless otherwise specified in the Supplementary Conditions or General Conditions) of all Shop Drawings, which will bear a stamp and specific written indication as stated on the shop drawing transmittal form. Submission of Shop Drawings shall constitute a representation that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable Engineer to review the information as required.

B. Contractor shall also submit to Engineer for review and action with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication as stated on the shop drawing transmission form. Submission of samples shall constitute a representation that

Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use of which intended.

C. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to Engineer's review and action of the pertinent submission will be the sole expense and responsibility of Contractor.

D. Submittal Procedures

1. Before submission of each Shop Drawing or sample Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

2. At the time of each submission, Contractor shall give Engineer specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation in separate attached letter to be made with each Shop Drawings submitted to Engineer for review and action of each such variation.

E. Engineer's Review

1. Engineer will review and take action on, with reasonable promptness, Shop Drawings and samples, but Engineer's review action will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto. The review and action of a separate item as such will not indicate the same action of the assembly in which the item functions. 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 action. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Engineer's review and action of Shop Drawings or samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing by separate attached letter called Engineer's attention to each such variation at the time of submission as required by paragraph 6.17.D.2. and Engineer has given written action of each such variation by a specific notation thereof incorporated in or accompanying the Shop Drawing or sample; nor will any action by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provision of paragraph 6.17.D.1.

ARTICLE 7 – OTHER WORK AT THE SITE

SC-7.04. Add the following new paragraph immediately after Paragraph 7.03:

7.04. *Claims between Contractors*

A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, Engineer's Consultants harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, Engineer's Consultants to the extent based on a claim arising out of Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of Work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or Engineer's Consultants or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbitrator which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants on account of any such damage or claim.

C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of time in accordance with paragraph 12.02. An extension of the contract time shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Engineer's Consultant for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, and Engineer's Consultant for activities that are their respective responsibilities.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03. *Project Representative*

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

B. *General*

1. Owner's Site Representative (OSR) or Resident Project Representative (RPR) as Owner's or Engineer's agent at the site, will act as directed by and under the supervision of Owner or Engineer, and will confer with Owner or Engineer regarding OSR's or RPR's dealings in matters pertaining to the on-site work shall in general be with Owner or Engineer and Contractor keeping Owner advised as necessary. OSR or RPR dealings with subcontractors

shall only be through or with the full knowledge and approval of Contractor. OSR or RPR shall generally communicate with Owner with the knowledge of and under the direction of Owner or Engineer.

C. Duties and Responsibilities of OSR or RPR

1. Schedules: Review the progress schedule, schedule of Shop Drawings submittals and schedule of values prepared by Contractor and consult with Owner or 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 prepare and circulate copies of minutes thereof.

3. Liaison

a. Serve as Owner's or Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents; and assist Owner or Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.

b. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

4. Shop Drawings and Samples

a. Record date of receipt of Shop Drawings and samples.

b. Receive samples which are furnished at the site by Contractor, and notify Owner or Engineer of availability of samples for examination.

c. Advise Owner or Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by Owner or Engineer.

5. Review of work, Rejection of Defective Work, Inspections and Tests

a. Conduct on-site observations of the Work in progress to assist Owner or Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

b. Report to Owner or Engineer whenever OSR or RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to 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 Owner or Engineer of Work that OSR or RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

c. Verify that tests, equipment and systems start-ups and operating and maintenance training are conducted in the presence of appropriate personnel and that Contractor maintains

adequate records thereof; and observe, record, and report to Owner or Engineer appropriate details relative to the test procedures and start-ups.

d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Owner or Engineer.

6. Interpretation of Contract Documents: report to Owner or Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Owner or Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report with OSR's or RPR's recommendations to Owner or Engineer. Transmit to Contractor decisions as issued by Owner or Engineer.

8. *Records*

a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, Owner or Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.

b. Keep a diary or log book, record Contractor hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Owner or Engineer.

c. Record names, addresses and telephone numbers of all Contractors, subcontractors and major suppliers of materials and equipment.

9. *Reports*

a. Furnish Owner or Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawings and sample submittals.

b. Consult with Owner or Engineer in advance of scheduling major tests, inspections or start of important phases of the Work.

c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from Contractor and recommend to Owner or Engineer Change Orders, Work Directive Changes, and Field Orders.

d. Report immediately to Engineer and Owner upon the occurrence of any accident.

10. *Payment Requests*

a. Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Owner or Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the work.

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

12. *Completion*

a. Before Owner or Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.

b. Conduct final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed or corrected.

c. Observe that all items on final list have been completed or corrected and make recommendations to Owner or Engineer concerning acceptance.

D. *Limitations of Authority*

1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by Owner or Engineer.

2. Shall not exceed limitations of Engineer's authority as set forth in the Agreement or the Contract Documents.

3. Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent.

4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advise or directions are specifically required by the Contract Documents.

5. Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.

6. Shall not accept Shop Drawing or sample submittals from anyone other than Contractor.

7. Shall not authorize Owner to occupy the Project in whole or in part.

8. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Owner or Engineer.

SC-9.07. Determinations for Unit Price Work

SC-9.07.A. Delete Paragraph 9.07.A in its entirety and insert the following in its place:

A. Engineer will have authority to determine the actual quantities and classifications of items of Unit Price Work performed by Contractor, and the written decisions of Engineer on such matters will be final, binding on Owner and Contractor and not subject to appeal (except as modified by Engineer to reflect changed factual conditions).

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

SC-11.03. Unit Price Work

SC-11.03.D. 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 total cost of a particular item of Unit Price Work amounts to 10% 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% 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 it has incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles it 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 paragraph 12.01 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed

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

SC-12.01. Change of Contract Price

SC-12.01.A.1 Add the following new paragraph immediately after Paragraph 12.01.A:

1. Notice of the amount of the claims shall include the following certification:

Contractor hereby certifies that this claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor's knowledge and belief, and that the amount requested accurately reflects the contract adjustment for which Contractor believes Owner is liable.

SC-12.01.C.2.b. Delete Paragraph 12.01.C.2.b. in its entirety.

SC-12.01.C.2.c. Delete Paragraph 12.01.C.2.c. in its entirety.

SC-12.02. *Change of Contract Times*

SC-12.02.A.1. Add the following new paragraph immediately after Paragraph 12.02.A:

1. Notice of the extent of the claim shall include the following certification:

Contractor hereby certifies that this claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor's knowledge and belief, and that the time requested accurately reflects the Contract adjustment for which Contractor believes Owner is liable.

SC-12.03. *Delays*

SC-12.03.B. Delete Paragraph 12.03.B. in its entirety and insert the following in its place:

B. Contractor shall make no claim for damages for delay in the performance of the Work occasioned by any act or neglect to act of Owner or any of its representatives, or be cause of any injunction which may be brought against Owner or its representative, including Engineer, and agrees that any such claim shall be fully compensated for an extension of time to complete performance of the Work as provided in Paragraph 12.02.

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

SC-13.03. *Tests and Inspections*

SC-13.03.B. Delete paragraph 13.03.B in its entirety and insert the following in its place:

B. Owner shall employ and pay for the services of an independent testing laboratory to perform tests, in conjunction with Owner's personnel, or approvals required by the Contract Documents except:

1. for inspections, tests or approvals covered by paragraph 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. below shall be paid as provided in said paragraph 13.04.C; and
3. as otherwise specifically provided in the Contract Documents.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02.B. *Review of Applications*

SC-14.02.B.1. Amend the first sentence of paragraph 14.02.B.1. by striking the word "Ten" and substituting the word "Fourteen".

SC-14.02.D. *Reduction in Payment*

SC-14.02.D.1. Add new paragraphs immediately after paragraph 14.02.D.1.d. which are to read as follows:

- e. of failure of Contractor to make payments to Subcontractors or Suppliers or for labor;
- f. additional compensation Owner is required to pay Engineer because of Contractor delays or rejection of defective work;
- g. of Contractor's failure to make acceptable submittals in accordance with the accepted schedules;
- h. liability for liquidated damages has been incurred by Contractor;

SC-14.04. *Substantial Completion*

Delete Paragraph 14.04. in its entirety.

SC-14.05. *Partial Utilization*

SC-14.05.A. Delete paragraphs 14.05.A.1 through 14.05.A.3 in its entirety and insert the following in its place:

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

SC-14.07. *Final Payment*

Delete paragraph 14.07. in its entirety and insert the following in its place:

14.07. *Final Payment*

A. When the work to be done under the contract is completed to the satisfaction of Engineer, Contractor may make application for final payment following the procedure for progress payments. Engineer will report and certify to Owner that the work to be done under the contract is complete to his satisfaction. Engineer will certify and submit with the report the final application for payment. The application will include the retainage withheld under the contract provisions. Contractor shall submit to Owner bonds and other documents as required by the Contract Documents.

B. Upon receipt of Engineer's report and certification that the work to be done under the contract is completed and Contractor's Bond and other documents as required by the Contract Documents, Owner will fix a day to consider said report and will give notice of the time and purpose of such meeting to all landowners in the drainage district on whose land the work was done by publication in a local newspaper and by ordinary mail. The date fixed for considering said report will be not less than ten (10) days after the date of mailing.

1. Any party interested in the said district or the work thereof may file objections to said report and submit any evidence tending to show said report should not be accepted. Any interested party having a claim for damages arising out of the work done under the contract may file said claim with Owner at or before the time fixed for the hearing on the completion of the contract.

2. If any claims for damages have been filed, Owner will review and determine said claims. If the determination by Owner on any claim for damages results in a finding by Owner that the damages resulting to the claimant were due to the negligence of Contractor, then Owner will provide for payment of said claim out of the remaining funds owing to Contractor.

3. If Owner finds the work under the contract has been completed and accepted, Owner will compute the balance due and if there are no liens on file against such balance, will, after thirty days have elapsed from date of Owner acceptance, pay Contractor the remainder of the contract price.

SC-14.08. Delete Paragraph 14.08 in its entirety.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

SC-15.02. Owner may Terminate for Cause

Delete paragraph 15.02.A.4. in its entirety and insert the following in its place:

4. Owner may, after giving, Contractor (and the surety, if any) ten days written notice, terminate the services of Contractor. The Owner shall then proceed to let contracts for the unfinished work in the same manner as original contracts, and apply all funds not paid to the

Contractor toward the completion of the work. In such case, Contractor shall not be entitled to receive any further payment until work is finished. If the unpaid balance of the Contract Price is not sufficient for all claims, costs, losses and damages sustained by Owner arising out of or resulting from completing the work, Contractor shall pay difference to Owner, or suit may be brought upon the bond of the Contractor.

TECHNICAL SPECIFICATIONS

SECTION 01 1000
SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY OF WORK

- A. This Section includes the following:
 - 1. Specification formats and conventions.
 - 2. Adjust list below to suit Project.
 - 3. Work covered by the Contract Documents.
 - 4. Use of premises.
 - 5. Owner's occupancy requirements.

1.02 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates. Abbreviated or outlined type includes incomplete sentences
 - a. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - 1) Omission of words or phrases, such as; "the contractor shall", "in conformance with", "shall be", "shall comply with", "as noted on the plans", "according to the plans", "a", "an", "the", and "all", are intentional and depending on the context, are implied.
 - 2) Supply omitted words or phrases by inference.
 - 3) Part numbers are not intended to be consecutive, but represent standard specification titles.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Engineer: I+S Group, ISG
- B. Work covers construction generally described in the Notice to Bidders and shown on the detailed project plans.
- C. Sales Tax:
 - 1. Owner is exempt from Iowa Sales and Use Tax and the following shall apply:
 - a. Owner will issue an "Iowa Sales Tax Exemption Certificate" and an authorization letter to the Contractor.
 - b. Contractor shall include "Iowa Sales Tax Exemption Certificate" and authorization with all subcontracts for project.
 - c. Contractor and subcontractors shall not therefore include sales and use tax in contractor amounts.

1.04 CONTRACTS

- A. Project will be constructed under a single prime contract. Construct work under lump sum and unit price contracts as indicated.

1.05 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.06 USE OF PREMISES

- A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period unless limited as indicated on Drawings by the Contract limits.
- B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine constructions operations to areas indicated on plans.
 - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.07 OWNER'S OCCUPANCY REQUIREMENTS

- A. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
- B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Subparagraphs below describe procedures and requirements necessary before partial occupancy of portions of Project.
 - 2. Engineer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
 - 3. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
 - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions.

1.08 WASTE MATERIALS DISPOSAL

- A. Arrange for disposal of waste materials as required.
- B. Stockpile or dispose of salvageable items as directed by Engineer.
- C. Salvageable items remain property of Owner.

1.09 BARRICADES AND LIGHTS

- A. Erect and maintain barricades and lights and/or watchmen for protection and warning of pedestrians and vehicles, prevent access of unauthorized persons to portions of site where work is in progress.
- B. Location and arrangement: conform to ordinances and laws. Meet approval of Engineer and Owner.

1.10 CONSTRUCTION FACILITIES

- A. Storage:
 - 1. Arrange for storage space to suit needs.
 - 2. Store materials and equipment in manner which will preserve their quality and fitness; provide temporary storage buildings as required.
 - 3. Location of construction facilities, including construction plant and yard on site, shall be subject to approval by Engineer; remove upon completion of work.

- B. Service: arrange for water, electrical energy, compressed air, and other services to meet own requirements.
- C. Sanitary: provide suitable sanitary facilities for construction personnel.

1.11 HISTORICAL OR ARCHAEOLOGICAL DISCOVERY

- A. If during the course of construction, evidence of deposits of historical or archaeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner who shall notify the Iowa Department of Natural Resources and the Director and Historic Preservation Officer, State Historical Department, E. 12th and Grand, Des Moines, Iowa 50319. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner that he may proceed. The Owner will issue a Notice to Proceed only after the State official has surveyed the find and made a determination to this department and the Owner. Compensation to the Contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of the specifications.

1.12 ENGINEERING SERVICES

- A. Engineer will furnish line and grade required to construct the work.
- B. Contractor shall preserve all monuments, bench marks, reference points and stakes established by the Engineer. In case of willful or careless destruction of the same, the Contractor will be charged with the resulting expense of replacement and shall be responsible for any mistakes or loss of time that may result from their unnecessary loss or disturbance.
- C. It shall be the duty of the Contractor to call to the attention of the Engineer any reference lines, points, or bench marks which may have been disturbed or which seem to be off line or grade.
- D. Contractor shall reimburse Owner for extra engineering cost necessitated by continuance of work beyond the completion date recognizing time extensions granted by Owner.
- E. Contractor shall reimburse Owner for extra engineering cost necessitated by use of equipment other than that detailed in plans and specifications.

1.13 WASTE MATERIALS DISPOSAL

- A. Arrange for disposal of waste materials as required.
- B. Stockpile or dispose of salvageable items as directed by Engineer.
- C. Salvageable items remain property of Owner.

1.14 P2 PRODUCTS (NOT USED)

1.15 P3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 4500
QUALITY REQUIREMENTS FOR DRAINAGE PROJECTS

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. See Divisions 02 through 49 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples.[Approved mockups establish the standard by which the Work will be judged.]
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as

"carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of **[one]** previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- C. Permits, Licenses, and Certificates: For Owner's and Engineer's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.
 - 2. Notify Engineer **[seven]** days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise indicated.
- J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.6 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities

having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report of each test, inspection, and similar quality-control service for each and every test required to be made as a part of the work covered by these specifications; or ordered by the Engineer, Owner, or Contractor; or supplementary testing that may be required as specified herein. At least one copy of each report shall be distributed to each of the Engineer, the Contractor, the Owner, and any governmental agency providing all or part of the project funding..
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.

- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Requirements of Contractor:
 - 1. Staking: when construction staking is set forth as the Contractor's responsibility.
 - a. Provide any and all additional staking beyond the line and grade established by the Engineer.
 - b. Utilize own forces or those of an outside survey organization.

1.7 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and reinspecting corrected work.

PART 2 PRODUCTS (Not Used, Specified in Their Respective Sections)

PART 3 EXECUTION

3.1 STAKING

- A. Cost of and responsibility for staking will be by the Owner.
- B. Staking will be provided by the Engineer.

3.2 PROJECT OBSERVATION

- A. Cost of and responsibility for project observation will be by the Owner, if provided.
- B. Project observation will be provided by the Engineer, if requested.

3.3 TESTING

- A. Cost of and responsibility for testing will be by the Contractor.
- B. Testing will be provided by the Contractor through an independent testing laboratory.
- C. Testing requirements are as follows:

SECTION	TITLE	TEST	RESPONSIBILITY OF
312334	Trench Excavation & Backfill for Agricultural Drain Tile Density (If Specified)	Standard Proctor in Place	Contractor

3.4 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 - 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.
- D. Materials and workmanship not meeting the required standards are to be removed and replaced at Contractor's expense including all subsequent testing except where modified herein.

END OF SECTION

Section 01 7329
CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. See Division 2 through 49 for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- C. See Division 07 Section "Penetration Firestopping" for patching fire-rated construction.

1.02 DESCRIPTION

- A. Execute cutting and patching of work required to:
 - Make several parts fit properly.
 - Uncover work to provide for installation of ill-timed work.
 - Remove and replace defective work.
 - Remove and replace work not conforming to requirements of Contract Documents.
 - Remove samples of installed work as specified for testing.
 - Install specified work in existing construction.
- B. Additional Requirements
 - 1. Upon written instructions of Engineer:
 - a. Uncover work to provide for Engineer's observation of covered work.
 - b. Remove samples of installed materials for testing.
 - c. Remove work to provide for alteration of existing work.
- C. Do not endanger any work by cutting or altering work or any part of it.
- D. Existing Work of Another Contractor
 - Do not cut or alter work of another Contractor without written consent of Engineer

1.03 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures seven days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Identification of Project
 - 2. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 3. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in Project's appearance and other significant visual elements.
 - 4. Products: List products to be used and firms or entities that will perform the Work.
 - 5. Dates: Indicate when cutting and patching will be performed.
 - 6. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
 - 7. Structural Elements and Materials: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - a. Should conditions of work or schedule indicate a change of materials or methods, submit written recommendation to Engineer. Include conditions indicating change, recommendations for alternative materials or methods, and submittals as required for substitutions.
 - 8. Cost: Prior to cutting and patching done on instruction of Engineer, submit cost estimate.
 - 9. Cost Responsibility: Prior to cutting and patching, designate the party responsible for cost of cutting and patching.
 - 10. Engineer's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
 - 11. Engineer's Observation: Submit written notice to Engineer designating time work will be uncovered to provide for observation.

1.04 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.05 PAYMENT FOR COSTS

- A. Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Engineer: party responsible for ill-timed, rejected or non-conforming work.
- Work done on instructions of Engineer, other than defective or non-conforming work: Owner (by pay item or change order only).

1.06 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including elements subject to movement or damage during:
 - a. Cutting and patching.
 - b. Excavating and backfilling.
 - 2. Inspect conditions after uncovering work, affecting installation of new products.
 - 3. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
 - 1. Provide shoring, bracing, and support as required to maintain structural integrity of Project.
- B. Protection:
 - 1. Protect in-place construction during cutting and patching to prevent damage.
 - 2. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
 - 3. Provide protection for other portions of Project.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.03 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 - a. Execute by methods which will prevent damage to other work and will prevent settlement.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

**SECTION 01 7710
DRAINAGE DISTRICT PROJECTS CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. See Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- C. See Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 APPLICABLE LAWS

- A. The Drainage Laws of the State of Iowa, Specifically, Chapter 468 of the Code of Iowa, as amended, shall govern the project closeout procedure.

1.3 SUBSTANTIAL COMPLETION

- A. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, within seven days the Engineer will either proceed with inspection together with Owner's representative or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
- B. Should Engineer consider that work is not complete:
 - 1. Engineer shall notify Contractor in writing stating reasons
 - 2. Contractor shall complete work and send second written notice to Engineer certifying that project, or designated portion of project, is complete.
 - 3. Engineer will reinspect work.
 - 4. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - a. Should Engineer be required to perform second inspection because of failure of work to comply with original certifications of Contractor, Owner will compensate Engineer for additional services and deduct amount paid from final payment to Contractor.
 - 5. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Submit a final Partial Application for Payment.
 - 2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- C. Contractor shall prepare and submit project record documents as required, and guarantees and bonds specified in General Conditions.
- D. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, within seven days the Engineer will either proceed with inspection together with Owner's representative or notify Contractor of unfulfilled requirements. Engineer will certify completion to owner after inspection or will notify Contractor of construction that must be completed or corrected before certification will be issued.

- E. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- F. Substantially Complete: Should Engineer consider that work is substantially complete:
 - 1. Engineer shall prepare an amended list of items to be completed or corrected as determined by the inspection.
 - 2. Engineer will prepare and issue a Certificate of Substantial Completion containing:
 - a. Date of substantial completion.
 - b. Amended list of items to be completed or corrected.
 - c. Time schedule to complete or correct work.
 - d. Time and date Owner will assume possession of work or designated portion thereof.
 - e. Signatures of:
 - 1) Engineer.
 - 2) Contractor.
 - 3) Owner.
- G. Evidence of Payments and Release of Liens: Contractor shall prepare and submit the following documents before final payment is made:
 - 1. Contractor's release or waiver of liens.
 - 2. Separate releases of waivers of liens for subcontractors, suppliers and others with lien rights against property of Owner together with list of those parties.
 - 3. All submittals shall be duly executed before delivery to Engineer.
- H. Final Application for Payment
 - 1. Contractor shall submit final application including retainage in accordance with requirements of General and Supplementary Conditions.
 - 2. Owner shall schedule Completion Hearing in concurrence with IAC468.101. At this hearing the Owner's review for acceptance and Contractor's final payment will be determined and made as per the General and Supplemental Conditions.
- I. Post-Construction Inspection
 - 1. Prior to expiration of one year from date of substantial completion, the Owner may request the Engineer to make visual inspection of project to determine whether correction of work is required in accordance with provisions of General Conditions.
 - 2. For guarantees beyond one year, Engineer will make inspections at request of Owner after notification to Contractor.
 - 3. Engineer will promptly notify Contractor in writing of any observed deficiencies.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

END OF SECTION

SECTION 01 7839
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings, including Shop Drawings.
 - 2. Record Specifications, including Change Orders.
 - 3. Record Product Data and Record Field Tests.
- B. See Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.02 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one (1) set of marked-up Record Prints.
- B. Record Specifications: Submit one (1) copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one (1) copy of each Product Data submittal.
- D. Record Field Tests: Submit one (1) copy of each test result required by the specifications.

PART 2 PRODUCTS

2.01 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - 2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 - 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Identification: As follows:
 - a. Project name and Project number.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name and Address of Contractor.

2.02 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders and Record Drawings where applicable.

2.03 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders and Record Drawings where applicable.

2.04 FIELD TESTS AND MISCELLANEOUS RECORD SUBMITTALS

1. Assemble field tests and miscellaneous records required by other Specification Sections for record keeping and submittal in connection with actual performance of the Work. Bind or file field tests and miscellaneous records and identify each, ready for continued use and reference.

PART 3 EXECUTION

3.01 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. This section specifies cast in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Shop Drawings: For steel reinforcement and formwork. Material test reports.
 - 1. To include bar schedule, bar details, size and location of openings, waterstops, joint systems, and curing method.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- C. Preinstallation Conference: Conduct conference at Project site, if required by contract documents.

PART 2 PRODUCTS

2.01 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Coat forms with nonbonding, non-staining commercial compounds.

2.02 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 or higher, deformed.
 - 1. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class[I] [II] zinc coated after fabrication and bending.
 - 2. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel welded Wire Reinforcement: ASTM A 497, flat sheet.
- D. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from galvanized steel wire into flat sheets.
- E. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain or deformed steel.
- F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.03 CONCRETE MATERIALS

- A. Cementitious Material: use the following cementitious materials, of the same type, brand, and source, throughout Project:
1. Portland Cement: ASTM C 150.
 - a. Normal Portland Cement Type I.
 - b. High Early Strength Portland Cement Type III.
 - c. Air-entrained Portland Cement Type IA.
 2. Supplementary cementing materials:
 - a. Fly Ash: ASTM C 618, Class C or F.
 3. May be either bagged or bulk. Partially set or caked cement will be rejected.
- B. Normal-Weight Aggregates: ASTM C 33, graded, 1-1/2-inch nominal maximum coarse-aggregate size.
1. Fine Aggregate:
 - a. Clean, hard, durable particles of natural sand that is free of silt, shale, coal, organic matter, or materials with deleterious reactivity to alkali in cement.
 - b. Most recent Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction:
 1. Gradation No. 1, Section No. 4110,4111,4125:

Sieve Size	Percent passing:
3/8"	100.
No. 4	90-100
No. 8	70-100
No. 30	25-55
No. 200	0-1.5
 2. Fineness Modulus: 2.3 minimum, 3.1 maximum
 - c. Objectionable materials, percent by weight:
 1. Clay Lumps 1.0% maximum
 2. Coal and/or Shale 2.0% maximum
 2. Coarse Aggregate
 - a. Clean, hard, durable particles of crushed stone free from injurious amounts of objectionable materials.
 - b. Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2009
 1. Gradation No. 5, Section No. 4115:

Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	20-55
No. 4	0-10
No. 200	0-1.5
 2. Gradation No. 3, Section No. 4115:

Sieve Size	Percent Passing
1-1/2"	100
1"	90-100
1/2"	20-60
No. 4	0-10
No. 200	0-1.5
 3. Objectionable materials, percent of weight:

a. Clay Lumps	0.5% maximum
b. Coal and Shale	0.5% maximum
c. Total of all Shale, Coal and Clay Combined	1.0% maximum

- d. Unsound Chert Particles Retained on 3/8" Sieve 3.0% maximum
- C. Water: ASTM C 94/C 94M.
 - 1. Water of known potable quality requires no testing.
- D. Air-Entraining Admixture: ASTM C 260.
 - 1. Add at the mixer, vary amount to produce specified air content.
- E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
 - 7. Use chemical admixtures only with prior approval by the Engineer.
- F. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, ½ to 1-1/2 inches (13 to 38 mm) long.

2.04 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.
- B. Plastic Vapor Retarder: ASTM E 1745, Class B. Include manufacturer's recommended adhesive or pressure-sensitive tape.
- C. Plastic Vapor Retarder: ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 8 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

2.05 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz/sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear or containing finely ground white pigment, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear or containing finely ground white pigment, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.
- G. Clear, Solvent-Borne or containing finely ground white pigment, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- H. Clear, waterborne or containing finely ground white pigment, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.06 RELATED JOINT MATERIALS

- A. Expansion – and Isolation – Joint Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork or ASTM D 1190, hot poured, nonextruding elastics.

2.07 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, with prior approval of Engineer.
- C. Proportion normal-weight concrete mixture as follows:

1. Meet either Minimum Compressive or Flexural Strength
 - a. Minimum Compressive Strength: 4,000 psi at 28 days and 2,800 psi at 7 days.
 - b. Minimum Flexural Strength: 650 psi at 28 days and 500 psi at 7 days
2. Maximum Water-Cementitious Materials Ratio: 0.466.
3. Slump Limit: 3 ½ inches plus or minus 1 inch or 8 inches (200 mm) for concrete with verified slump of 3.5 inches (88.9 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
4. Air Content: 6 percent, plus or minus 1 percent at point of delivery for 1-1/2-inch (38 mm) nominal maximum aggregate size.
5. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate.

2.08 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.09 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix and deliver concrete according to ASTM C94/C 94M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing time to 60 minutes.

PART 3 EXECUTION

3.01 SUBGRADE

- A. Insure Subgrade is true to line and grade and compacted as specified.
- B. Fill and recompact any ruts or depressions.
- C. Check cross section with a template.
- D. Place moisture barrier or moisten Subgrade prior to placing of concrete. Method to be approved by the Engineer.

3.02 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Oil temporary forms with nonstaining form oil before reinforcing steel is placed.
- D. Provide ¾" chamfer on exterior corners and edges of permanently exposed concrete.

3.03 REMOVAL OF FORMS

- A. Do not remove forms or supports until concrete has acquired sufficient strength to safely support its own weight and the superimposed loads.
- B. Remove formwork for columns, walls, beam sides and other parts not supporting the weight of the concrete as soon as the concrete has hardened sufficiently to resist damage from removal operations.
- C. Formwork for slabs, beam soffits, and other parts supporting the weight of the concrete shall remain in place until the concrete has reached its specified 28 day strength.
- D. Protect concrete from damage prior to acceptance.
- E. Prohibit traffic until concrete is at least 5 days old with an acceptable strength test.
- F. Cure area previously covered by forms.

3.04 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.05 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.06 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Support and tie all reinforcing, including temperature steel.
- C. Place reinforcing steel in accordance with the approved shop drawings.
- D. Position and support, wire together, and securely fasten in place to insure against displacement during the placing of concrete. Support reinforcing steel for slabs on grade on concrete brick or reinforcing bar supports. Wall and column dowels to footings or base slabs shall be tied in position prior to concrete pour. In no case shall these dowels be placed after placement of concrete.
- E. Unless otherwise indicated, the minimum concrete coverage shall be as follows:
 - 1. Concrete against ground – 3" for bars.
 - 2. Concrete exposed to weather – 2" for bars larger than #5 and 1-1/2" for #5 bars or smaller.
 - 3. Columns and beams not exposed to ground or weather – 1-1/2".
 - 4. Slabs and walls not exposed to weather – 3/4".
- F. Place temperature reinforcing for slabs on grade at the center of the slab.
- G. Promptly notify the Engineer when all reinforcing steel for each pour has been placed. Obtain Engineer's approval before commencing pour.

3.07 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by engineer.
 - 1. Locations where not shown; maximum spacing is:
 - a. Driveways: 10'
 - b. Sidewalks: 4'
 - c. Other flat slabs: 20 times slab thickness.
- C. Contraction Joints in Slabs-On-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-On-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Install where shown on the plans, seal top.
 - 2. Locations where not shown: All structures and features which project through, into or against slab.
 - 3. Install according to manufacturer's recommendations, set material securely before placing concrete.

4. Install 1" width unless shown otherwise.
- E. Filling Joints:
 1. Fill not later than 14 days after sawing.
 2. Fill immediately following cleaning.
 3. Fill to 1/4" ± 1/8" of surface.
 4. Remove excess while material is still pliable.
 5. Refill low areas where necessary
 6. Omit filling sawn sidewalk joints.

3.08 WATERSTOP

- A. Polyvinyl chloride, center bulb. Size to suit joints, minimum 4".
- B. Bentonite. Size to suit joints, minimum 1" x 3/4".

3.09 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness (max of 24") that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation. Avoid inclined construction joints.
 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 2. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to penetrate placed layer of concrete and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. Limit vibrations to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
- C. Cold-Weather Placement: Comply with either of the following:
 1. ACI 306.1
 2. Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2001, Section 2301.19.
 - a. Begin mixing with minimum air temperature at 35 deg F and rising.
 - b. Stop mixing and placing when air temperature is 40 deg F and falling.
 - c. Do not place concrete on frozen Subgrade.
 - d. Do not permit aggregate containing frozen lumps.
 - e. Place no concrete when stormy or inclement weather is imminent or will prevent good workmanship.
 - f. During cold weather, protect as follows:

Forecast Night Temperature	Type of Protection
35 deg F to 32 deg F	One layer of burlap for concrete.
31 deg F to 25 deg F	Two layers of burlap or one layer of plastic on one layer of burlap
Below 25 deg F	Four layers of burlap between layers of 4 mil plastic, two layers of plastic and/or burlap and 6" of straw, or equivalent commercial insulating material approved by the Engineer.

Covering for temperatures over 25 deg F to remain in place for 48 hr. For temperatures under 25 deg F, leave in place for a minimum of 5 days.

- g. Place header 45 minutes before sunset unless directed otherwise by Engineer.
- h. Complete all finishing operations prior to darkness.
- D. Hot-Weather Placement: Comply with ACI 301.
- E. Clean transporting equipment, reinforcing, and embedded items before placing concrete.

- F. Batch trucks or paving equipment not permitted on prepared subgrade unless authorized by the Engineer based on actual job conditions.
- G. Prevent segregation during placing.
- H. Place concrete continuously so that each pour unit will be monolithic in construction and will terminate at expansion, contraction or construction joint. Permit not more than 30 minutes between depositing adjacent batches.
- I. Place slab concrete over membrane waterproofing before waterproofing has become damaged or dirty.
- J. Slope horizontal surfaces of exterior concrete for drainage.

3.10 FINISHING SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
- B. Smooth-Finished Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-foot long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
- D. Protect pavement from all damage prior to final acceptance.
- E. Exclude traffic until concrete is at least 5 days old with an acceptable strength test.
- F. Permit construction equipment only as directed by Engineer.
- G. Protect against weather, contractor to have on site enough burlap or canvas to protect surface of fresh concrete in case of rain.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.
- B. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Use nonshrink grout as herein specified, to blend with in-place construction. Provide other miscellaneous concrete fillings shown or required to complete work.

3.14 FIELD QUALITY CONTROL AND TESTING

- A. Testing and Inspection: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
 - 1. Testing Services: Tests shall be performed according to ACI 301.
 - 2. Furnish at least a set of three cylinders from each major pour for test purposes.
 - a. Set of three cylinders 6" x 12" used when max aggregate size does not exceed 2" diameter.
 - b. Set of four cylinders 4" x 8" may be used when max aggregate size does not exceed 1.25" diameter.
 - c. Major pour defined as 150 cubic yards or 5,000 square feet of surface area of slabs or walls.
 - d. Project and transport cylinders from time and place made to the lab.
 - 3. Test one cylinder at 7 days, test second and third cylinder at 28 days if the second cylinder meets or exceeds the specified compressive strength.
 - a. If second cylinder is below the specified compressive strength, the Engineer shall be notified prior to testing the third cylinder.
 - b. If 4" x 8" cylinders utilized, hold 4th cylinder until tests accepted by Engineer.
 - 4. At 28 days, no single test strengths (the average of strengths of at least two cylinders from a batch) shall be less than 500 psi below the specified compressive strength. The average of any three consecutive test strengths must equal or exceed the specified compressive strength.
 - 5. In the case that the test strengths do not pass, provide core samples.

6. Pay cost of all testing including necessary core samples and tests.
7. Provide one copy of all test reports to Engineer from testing laboratory designated and approved by Engineer.
8. Engineer to specify testing requirements for pours less than 150 cubic yards.

3.15 MISCELLANEOUS CONCRETE ITEMS

- A. Equipment bases and foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing machines and equipment. Use nonshrink grout as shown on plans.
- B. Steel pan stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.
- C. Reinforced masonry: Provide concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

END OF SECTION

SECTION 31 1004

OPEN DITCH CLEARING, GRUBBING AND CHEMICAL TREATMENT

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Removal, disposal and cleanup of trees, stumps, logs, down-timber, hedges, shrubs, brush, herbaceous vegetation and rubbish within the work limits as per instructions on drawings, and/or chemical treatment of cut stumps.
- B. All work to be done in accordance with these specifications and the requirements of State of Iowa and OSHA Standards.

1.02 WORK AREA

- A. All work to be confined within work limits unless otherwise stated herein or on the drawings.
- B. Engineer will mark the work limits prior to execution of work.

1.03 PROTECTION OF ITEMS ADJACENT TO WORK

- A. Protect all property outside the established work limits.
- B. Protect all crops remaining within the work limits, except those that interfere with proper prosecution of the work.

1.04 LIMITATIONS OF OPERATIONS

- A. Work shall be conducted so as to create a minimum amount of inconvenience to adjacent property owner.
- B. Engineer has authority to limit work to a specific section until work in that section is complete.
- C. Engineer has authority to temporarily delete sections of work if such temporary delay:
 - 1. Will provide sufficient time for adjacent landowner to harvest a crop within work limits, and
 - 2. Will not materially slow Contractor's scheduled progress.
- D. When work is to be performed within county road right-of-way, the County Engineer shall be given sufficient prior notice so that proper safety measures may be taken. Contractor shall comply with requirements of County Engineer.
- E. Clearing, grubbing and cleanup to be completed before excavation begins.

1.05 SUBMITTALS

- A. Manufacturer's certification of compliance with specification requirements for chemicals used.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide materials required to perform work as specified.

2.02 P3 EXECUTION

2.03 CLEARING (IF SPECIFIED ON DRAWINGS)

- A. Clear all areas within work limits unless shown otherwise on plans.
- B. Remove all trees, logs, brush, down-timber, rubbish and debris unless shown or directed otherwise.
- C. If Grubbing is not to be done, cut to within three inches (3") of ground surface.

2.04 GRUBBING (IF SPECIFIED ON DRAWINGS)

- A. Remove stumps, root systems, rocks, etc. to following depths:
 - 1. Under fills - 1'-0" below natural ground
 - 2. Other areas - 1'-6" below natural ground

2.05 CHEMICAL TREATMENT (IF SPECIFIED ON DRAWINGS)

- A. Spray or paint stumps the same day of cutting with Banvel CST or approved equal. Apply by manufacturer's recommendation.
- B. Avoid contaminating water. Protect plants and trees designated on the plans or by the Engineer to be saved.

2.06 DISPOSAL AND CLEANUP

- A. All material shall be burned, buried or otherwise disposed of in a manner approved by Engineer.
- B. Burning:
 - 1. Within work limits as permitted by regulating agencies as work progresses.
 - 2. Unguarded fires not permitted.
 - 3. Obtain necessary burning permits.
- C. Burying:
 - 1. Within work limits or in other area approved by Engineer.
 - 2. Any debris to be buried shall be so placed that when covered, highest point of debris is at least two (2) feet below natural ground surfaces or finished work surface.
- D. Other Disposal Methods:
 - 1. Contractor may log out or chip and haul away any trees and brush designated to be cleared unless otherwise directed by the plans.
 - 2. Other disposal methods not specifically de-scribed herein are to be proposed to and ap-proved by Engineer and owner prior to begin-ning.
- E. Cleanup:
 - 1. Gather and dispose of debris remaining after the primary disposal operation. Generally, any debris that could reasonably be expected to interfere with farming operation shall be cleaned up. Disposal to be in a manner approved by Engineer.

END OF SECTION

SECTION 31 2334

TRENCH EXCAVATION AND BACKFILL FOR AGRICULTURAL

DRAIN TILE

PART 1 GENERAL

2.01 GENERAL DESCRIPTION OF WORK

- A. Excavation, shoring, dewatering, pipe bedding, trench backfill, compaction, grading and cleanup of all pipeline trenching for the project.
- B. All work must be done in accordance with these specifications and the safety requirements of the State and OSHA Standards.
- C. Work within limits provided by Owner as noted on plans.

PART 2 PRODUCTS

3.01 PIPE BEDDING AND BACKFILL

- A. Determination of source of materials for bedding and backfill shall be responsibility of Contractor, but use of such materials shall be subject to approval of Engineer.
- B. Pipe Bedding shall be granular (crushed stone or rounded gravel) material, gradation of which shall fall within following limits:
 - U.S. Standard Sieve Size Percent Passing By Weight
 - 1" (25.4 mm) 100
 - 3/4" (19.0 mm) 95 (minimum)
 - #4 (4.75 mm) 5 (maximum)

3.02 SPECIAL SAND BACKFILL

- A. Use pit run sand or fine aggregate with at least 90% passing #4 sieve and no more than 10% passing the #200 sieve.

3.03 CRADLING ROCK

- A. Use crushed rock or stone with 70-100% passing 1 1/2" sieve and no more than 50% passing 1" sieve.

3.04 FILTER FABRIC

- A. As shown on plans.

3.05 P3 EXECUTION

3.06 GENERAL

- A. Excavate to design grades and alignment as staked by Engineer.
- B. Trench excavation and backfill is incidental to drain tile installation.
- C. Plan grade may be adjusted ± 1.5 feet to satisfy un-foreseen construction problems. No additional compensation will be made for this adjustment.
- D. Protection of Existing Utilities:
 - 1. Notify all utilities of location and schedule of work.
 - 2. Locations and elevations of utilities shown on plans are to be considered approximate only. Notify utility and Engineer of conflicts between existing and proposed facilities.
 - 3. Repair, relay or replace existing utilities damaged, destroyed or disrupted during work. Unless specified otherwise, replacement will be at the Contractor's expense.

3.07 FENCING

- A. Fences crossing or paralleling construction operations on drainage district right-of-way.
 - 1. Remove fence doing as little damage as possible to fence.
 - 2. Secure permission from landowner for method of removal.
 - 3. Replace fence using fence material removed or provide new material of like kind.
 - 4. Fence removal and replacement incidental to tile construction.

3.08 ROCKS

- A. Remove rocks, stones and boulders from ditch excavation.

- B. Dispose of rocks, stones and boulders in ditch only after pipe is covered by two feet of backfill.
- C. Removal and disposal incidental to tile construction.

3.09 EXCAVATION AND TRENCHING

- A. General
 - 1. Method of excavation at Contractor's option.
 - 2. Place spoil where most convenient for back-filling trench or as directed by Engineer.
 - 3. Stockpile and replace topsoil to a minimum of 8" for surface restoration.
- B. Trench characteristics
 - 1. Depth: As indicated for pipe installation to lines and grades required for proper allowance for thickness of pipe and type of bedding specified or indicated.
 - 2. Width: outside diameter of pipe plus 12" unless otherwise noted on plans.
 - 3. Trench walls must be vertical below top of pipe and may be vertical or sloped above pipe to conform to excavating codes.
 - 4. Trench bottom shall be free of large stones and other foreign material.

3.10 SOFT SPONGY OR UNSTABLE MATERIAL

- A. Stop work and notify Engineer.
- B. Perform remedial work as directed.
- C. If material is judged unsuitable and removal is authorized, remove and replace with trench stabilizing material as directed by Engineer.

3.11 TRENCH BACKFILL

- A. Use earth materials from excavated areas free from large stone, clods, organic matter, rubbish, frozen materials or other foreign materials.
- B. Initial Backfill
 - 1. Blind pipe only until grade check by Engineer is complete.
 - 2. Carry out in an orderly fashion after authorization to cover pipe has been given.
 - 3. Allow no more than 300' of trench to be open at one time.
 - 4. Do not backfill until concrete or mortar has sufficiently cured.
 - 5. Record location of connections and appurtenances before backfilling.
 - 6. Place by hand and hand tamp to not less than 12" above top of pipe.
 - 7. Backfill simultaneously on both sides of pipe to prevent displacement.
- C. Subsequent Backfill
 - 1. Backfill consistent with progress of work.
 - 2. Work backfilling equipment to prevent displacement of tile and to compact ditch as much as possible.
 - 3. Mound excess excavation above trench surface.
 - 4. Rework areas of settlement at Engineer's direction. Complete remedial measures immediately.

END OF SECTION

SECTION 31 2335
OPEN DITCH EXCAVATION AND SPOIL BANK LEVELING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Open Ditch Excavation: Includes sloping, shaping, removal and disposal of material from open ditch and surface channels to reconstruct ditch bottom and side slopes.
- B. Spoil Bank Leveling: Includes disposal, leveling, shaping and cleanup of excavated spoil to conform to plan requirements.
- C. Includes removal and disposal of fence as directed by Engineer.
- D. Includes repair of over bank washouts as noted on the plans or directed by the Engineer.

1.02 ALIGNMENT DESCRIPTION

- A. Follow approximate centerline of existing open ditch or as staked and directed by Engineer.

1.03 LIMITS OF OPERATION

- A. Excavation to begin at the lower end and proceed upstream, unless otherwise noted on the plans or directed by the Engineer.
- B. Deposit no spoil within public road right-of-way, unless noted on the plans or directed by the Engineer.
- C. Notify and comply with all requirements of County Engineer with regard to safety measures, roadway protection and repair and cleanup for all work within county road right-of-way.
- D. Remove only fence within the work limits that directly interferes with the work.
- E. Protect all items to be salvaged and/or saved as indicated on plans or directed by the Engineer.

1.04 PROCEDURES AT BRIDGES

- A. Private Bridges
 - 1. Unless noted for removal and disposal on the plans or directed by the Engineer, save all private bridges.
 - 2. Bridge deck may be removed and replaced to facilitate necessary excavation at Contractor option and expense.
 - 3. Contractor will not be held responsible for damage to structure due to design grade line being below existing footings.
- B. County or State Road Bridges
 - 1. Remove sediment in a manner approved by the Engineer and appropriate county or state government entities.
- C. To avoid over excavation under all bridges, do not excavate more than 0.5 feet below design grade or as directed by the Engineer.

1.05 FENCE REMOVAL

- A. At the time of Notice of Award, the Engineer will notify all landowners with property within the work limits, of their opportunity to remove fences that interfere with the work.
- B. Contractor shall give the Engineer a ten (10) day notice before he removes any livestock fence that interferes with his work.
- C. Having been given proper notice, Contractor shall remove all fence not removed by the landowner and shall be paid a fair and equitable price for fence
- D. For quantity determination purposes only, a fence shall be define as a barrier consisting of at least three barbed wires or woven wire fastened to posts set no more than 33 feet apart or any other substantial barrier determined by the Engineer to be a fence. Removal of all other barriers shall be considered rubbish and incidental to clearing and grubbing operations under Section 311004 – Open Ditch Clearing, Grubbing and Chemical Treatment.
- E. Landowner shall be responsible for replacing fences.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide those materials as required to perform work as specified.

PART 3 EXECUTION

3.01 PREPARATION

- A. Obtain Engineer's acceptance of clearing and grubbing work.
- B. Construct an adequate work road where excavation will be from an existing spoil bank.
- C. Notify appropriate government entity where excavation will be from a public roadway and make necessary arrangements for disposal of spoil.

3.02 FENCE REMOVAL

- A. Observe requirements of this Section and instruction noted on the plans.
- B. Use reasonable care in handling fence to be salvaged and stockpiled.
- C. Dispose of fence not to be saved in a manner approved by the Engineer.

3.03 EXCAVATION

- A. Deposit all excavated material at least three (3) feet back of top of existing ditch bank on existing spoil bank unless directed otherwise by Engineer.
- B. Remove spoil equally from both sides of the ditch and dispose of continuously as excavation operation progresses.
- C. Excavate all material lying above the neat line shown on the plans and as staked by Engineer.
- D. Avoid excessive over-excavation of grade and bottom width expansion.
- E. Fill and/or shape over bank washouts to reasonably conform with design cross-sectional shape.

3.04 FINISHING

- A. Shape and slope ditch bottom and sideslopes to reasonably conform with alignment, grade and cross sections shown on plans or as established by Engineer.
- B. Shape and slope spoil to a uniform cross section in close compliance with the typical cross section details contained in the standard drawings.
- C. Provide a reasonably smooth surface ready for seeding operations.

3.05 CLEANUP

- A. Dispose of all boulders, rocks and pieces of broken concrete or clay debris which have a vertical projection of three inches (3") or more above the ground surface or a diameter of four inches (4") or more that are visible after excavation and finishing operations.
- B. Dispose of all tree roots and branches larger than one inch (1") in diameter and other rubbish that surface during excavation and finishing operations.
- C. Dispose in manner approved by Engineer.

END OF SECTION

SECTION 31 3700

RIPRAP

PART 1 GENERAL

1.01 GENERAL DESCRIPTION OF WORK

- A. Perform excavation and place riprap or erosion stone as indicated on plans including all appurtenant required site grading.
- B. Restore obstructions removed to accommodate construction equipment or to facilitate excavation.
- C. Secure waste and/or borrow sites as required for project.

1.02 SUBMITTALS AND QUALITY ASSURANCES

- A. Provide source of material.
- B. Gradation of aggregate.
- C. Tests results for bulk specific gravity, soundness in magnesium sulfate, and soundness in freezing and thawing performed on sample obtained from each ledge proposed for use. Test results are shall have been performed during the last 12 months prior to delivery.

1.03 TEST METHODS

- A. Bulk Specific Gravity: Saturated surface-dry (SSD) condition with bulk specific gravity so determined shall not be less than 2.55.
- B. Soundness in Magnesium Sulfate: Test according to ASTM C88. The combined loss at 5 cycles shall not be more than 8 percent.
- C. Soundness in Freezing and Thawing: Test according to AASHTO T103, Ledge Rock Method C. Loss at 12 cycles shall not exceed 5 percent.

PART 2 PRODUCTS

2.01 RIPRAP

- A. Use broken limestone, dolomite or quartzite.
- B. Provide sound material not subject to disintegration under action of air or water.
- C. Take material from blasted rock. No added pro-cessing necessary except for selected loading.
- D. Gradation: Well-graded material meeting following size limitations:

<u>Stone Wt., Lbs.</u>	<u>Min %></u>
250	0
90	50
5	90

2.02 EROSION STONE

- A. Use broken limestone, dolomite or quartzite.
- B. Provide sound material not subject to disintegration under action of air or water.
- C. Gradation: nominal 6 inch mixture well-graded meeting following size limitations:

<u>Stone Wt., Lbs.</u>	<u>Dia., In.</u>	<u>Min/Max %></u>
100		0
30	6"	20-50
5	3"	80-100

Passing 1/2" sieve ≤5%.

2.03 ENGINEERING FABRIC

- A. May be a woven or nonwoven synthetic material.
- B. Physical Properties:
 - 1. Weight (min.) – 8 oz/yd.
 - 2. Grab Tensile Strength (min.) – 200 psi
 - 3. Width (min.) – 12'-6"
- C. Trevira 1127, Amoco 4508, Synthetic Industries 801 grade or approved equivalent.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

- A. Perform cuts and fills to line and grade shown on plans and/or details.
- B. Grade subgrade surface smooth, firm and uniform.
- C. Place no riprap until subgrade has been inspected and approved by Engineer.

3.02 EQUIPMENT PLACEMENT

- A. Place uniformly in one lift and in manner to avoid dis-ruption of underlying materials.
- B. Avoid segregation.
- C. Hand place as required around structures.

3.03 HAND PLACEMENT

- A. Securely bed larger rocks.
- B. Fill voids with smaller rocks or fragments.
- C. Avoid segregation.

END OF SECTION

**SECTION 32 9221
OPEN DITCH SEEDING AND FERTILIZING**

PART 1 GENERAL

1.1 QUALITY ASSURANCE

- A. Source Quality Control provides producer's tests for purity and germination of seed, dated within nine (9) months of sowing.
- B. Submit seed and fertilizer bag labels as evidence of materials supplied.

1.2 JOB CONDITIONS

- A. Existing Conditions: Perform seeding only after preceding work affecting ground surface is completed.
- B. Environmental Requirements
 - 1. Plant seed on unfrozen soil with adequate moisture content.
 - 2. Seed between calendar dates: April 1 to October 1.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Mix

<u>Species</u>	<u>% By Weight</u>
Alfalfa (Northern Grown)	25%
Bromegrass (Smooth)	75%
- B. Use clean, dry, new crop seed.
- C. Legume seed shall be inoculated by the wet method and shall not be exposed to direct sunlight for periods of time exceeding one-half hour prior to seeding.
- D. Companion crop when specified shall be 1-1/2 bushels of clean oats per acre.

2.2 FERTILIZER

- A. Commercial agricultural fertilizer meeting the requirements of applicable state laws.

2.3 MULCH

- A. Clean straw or wood cellulose fiber.
- B. Jute netting.

PART 3 EXECUTION

3.1 GENERAL

- A. Furnish all labor, tools, equipment and materials required to complete the fertilizing and seeding operations.

3.2 INSPECTION

- A. Check that preceding work affecting ground surface is completed and area to be seeded is reasonable smooth.
- B. Verify that soil is unfrozen and within an allowable range of moisture content.

3.3 SEEDBED PREPARATION

- A. No special seedbed preparation is required for the slopes of open ditches and other areas unable to be traversed by equipment, if fertilized and seeded at the end of each day of operation.
- B. When provisions of Item 3.02.A. above cannot be met, preparation of seedbed on slopes of open ditches and other areas not traversable shall be accomplished by harrowing.
- C. For all other areas where equipment can be safely operated, the seedbed shall be adequately loosened (2 to 4 inches) and smoothed by disking.

3.4 FERTILIZING

- A. Fertilizer shall be applied uniformly at the following rate in pounds per acre:

N	P2O5	K2O
50	200	100
- B. For open ditches and other areas not traversable, fertilizing shall be accomplished by one of the following means:
 - 1. Spread dry fertilizer by portable cyclone spreader.
 - 2. Use liquid fertilizer and apply with a sprayer uniformly in a manner to pre-vent contamination of surface water.
- C. If air or hydro seeding, fertilizer may be applied with seed.

3.5 SEEDING AND MULCHING

- A. The seeding operation shall be performed immediately after the seedbed is prepared.
- B. The seed shall be broadcast or drilled with equipment that will insure uniform distribution of the seed.
- C. For slopes of ditches and other areas unable to be safely traversed by equipment, seeding shall be applied by one of the following methods:
 - 1. A portable cyclone seeder.
 - 2. Hydro-seeder with:
 - a. Pump rated at not less than 100 gpm.
 - b. Means of measuring tank volume.
 - c. Tank agitator.
 - 3. Air seeder with:
 - a. Constant air pressure across boom.
 - b. Granulator for seeding rate control.
 - c. Capability for partial boom use.
- D. Apply seed at the following rate: 30 lbs/acre (based on pure live seed).
- E. For hydro-seeding, apply 400 gallons of slurry (water, seed and fertilizer) per acre.
- F. Cover seed on traversable slopes to a depth of 1/4 to 1/2 inch by cultipacking immediately after seeding.
- G. Drilled seedings need not be cultipacked if completed with press wheels.
- H. Apply mulch at 2000 lbs./acre where specified and anchored by a straight disk.
- I. Place jute netting over steep seeded area where specified and anchor with stakes 4 feet o.c. and at edges.

3.6 TEMPORARY SEEDINGS

- A. For periods when permanent seedings cannot be completed on traversable slopes, a temporary seeding of oats shall be made at a rate of 3 bushels per acre.
- B. The residue from this crop shall be incorporated into the soil during seedbed preparation at the next permanent seeding period.
- C. For ditch bank slopes finished after October 1, complete fertilizing and seeding operations between the period of April 1 to April 20 of the following year.

3.7 CLEANUP

- A. Remove trash and excess materials from project site.

END OF SECTION

**SECTION 33 4114
SURFACE DRAIN PIPE**

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Furnish and install or salvage and reinstall corrugated metal pipe and appurtenant connecting bands as extensions of drain tile systems and for surface pipe outletting into the open ditch.
- B. Cut or extend corrugated metal pipe tile extensions or surface pipe.

1.2 EXISTING DRAIN TILE AND EXTENSIONS

- A. Do not disturb existing drain tile extensions or surface pipe not specifically indicated for removal, replacement or salvage on drawings or by Engineer.
- B. Repair or replace all such extensions damaged or destroyed by willful or negligent actions as ordered by Engineer and at no expense to Owner.
- C. Repair all existing tile intercepted, broken or forced out of alignment during construction of this project as directed by Engineer at no expense to Owner.

1.3 SUBMITTALS

- A. Provide manufacturer's certification of compliance with specification requirements for pipe, drain tile and appurtenances.

1.4 CHANGES

- A. Obtain prior approval for changes in location, diameter and length of pipe indicated on drawings from Engineer.

PART 2 PRODUCTS

2.1 CORRUGATED METAL PIPE (CMP)

- A. Steel pipe: AASHTO M36, Type 1.
- B. Aluminum pipe: AASHTO M196.
- C. Wall Thickness: 16 gauge unless shown otherwise.
- D. Use same materials as pipe for all joint material.

2.2 DRAIN TILE

- A. Concrete: ASTM C412.
- B. Clay: AASHTO M179 Extra Quality.

2.3 VITRIFIED CLAY PIPE (VCP)

- A. ASTM C700 Extra Strength.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Complete channel excavation prior to commencing this work.
- B. Use salvaged pipe or new metal pipe in minimum lengths of 20 feet unless directed otherwise by Engineer.
- C. Make all cuts for metal pipe with torch or saw. Grind rough edges.
- D. Excavate and backfill as required for installation.

3.2 BEDDING

- A. Shape trench bottom conforming to Class C, Type 2 bedding as shown on Std. Dwg. D-01, Pipe Envelope Requirements.
- B. Provide bearing for 25% of exterior circumference of pipe.

3.3 SURFACE PIPE

- A. Locate in low spots along open ditch or replace existing as shown or directed by Engineer to provide drainage through finished spoil banks.
- B. Camber trench bottom to anticipate spoil bank settlement.
- C. Install with upper inlet 1/2 pipe diameter below natural grade.
- D. Install outlet with no more than 4 feet of exposed pipe, no more than 2 feet above ditch flowline and with flow falling at ditch bottom.
- E. Provide minimum fall of one foot over total pipe installation.
- F. Shape spoils bank and surrounding area to drain toward inlet.
- G. Place steel fence post at surface pipe inlet.

3.4 DRAIN TILE EXTENSIONS

- A. Locate near or at existing tile outlet unless directed otherwise by Engineer.

- B. Terminate metal pipe extension with no more than 4 feet exposed, between 2 and 4 feet above ditch flowline and with flow falling at ditch bottom.
- C. Size extension to fit over tile at least 6 inches on undisturbed soil.
- D. Place concrete collar at least 1 foot long by 6 inches thick around joint.

3.5 CLEAN-UP

- A. Mound excess trench excavation over trench.
- B. Reshape spoil bank as needed.

END OF SECTION

**SECTION 33 4617
AGRICULTURAL DRAIN TILE**

PART 1 GENERAL

1.1 GENERAL DESCRIPTION OF WORK

- A. Furnish and install pipe for agricultural drainage as indicated on plans.
- B. Provide transportation and handling, excavation, compaction, dewatering, sheeting, shoring, utility repair and/or relocation, surface restoration and miscellaneous associated work.
- C. Excavate as provided in Section 312334 - Trench Excavation and Backfill For Agricultural Drain Tile.

1.2 SUBMITTALS AND QUALITY ASSURANCE

- A. Furnish manufacturers certificates for strength and/or class of pipe for all sizes installed.
- B. Furnish manufacturer's literature with sample if practical of incidental materials to be incorporated. Provide source names for bedding material, concrete encasement, if required for project.

PART 2 MATERIALS

2.1 REINFORCED CONCRETE PIPE (RCP)

- A. Circular Pipe: ASTM C76.
- B. Arch Pipe: ASTM C506.
- C. Elliptical Pipe: ASTM C507.
- D. Strength
 - 1. Under roadways and within 5' on either side: Class III (AASHTO 2000D).
 - 2. Under railroads for distance shown on plans: Class V (AASHTO 3750D).
 - 3. All other areas unless specified otherwise on plans or details: Class II (AASHTO 1500D).

2.2 CORRUGATED METAL PIPE (CMP)

- A. Circular Pipe: AASHTO M36, Type I.
- B. Arch Pipe: AASHTO M36, Type II.
- C. Wall Thickness: 16 gage unless shown otherwise.
- D. Perforated Pipe
 - 1. AASHTO M36, Type III.
 - 2. Use only where specifically designated on plans or as directed by Engineer.

2.3 CONCRETE

- A. Comply with Cast-In-Place Concrete - Section 033000.
- B. Ready mix concrete may be used with approval of Engineer.

2.4 TUBING

- A. Corrugated polyethylene tubing: ASTM F405.

2.5 DRAIN TILE

- A. Concrete: ASTM C412.
- B. Clay: AASHTO M179 Extra Quality.

2.6 VITRIFIED CLAY PIPE

- A. ASTM C700 Extra Strength.

PART 3 EXECUTION

3.1 BEDDING

- A. Shaped Trench Bottom
 - 1. Unless specified elsewhere, the normal bedding for drain tile will be a hand shaped trench bottom; conforming to Class C, Type 4.
 - 2. Circular bottom shall provide bearing on 16% of exterior circumference of pipe.
 - 3. Shape bottoms for non-circular pipe to conform to pipe shape.
- B. Granular Bedding
 - 1. Use only where specified or required by Engineer.
 - 2. Excavate trench 6" below invert.
 - 3. Place granular material full width of trench.

4. Provide shaped bottom for pipe. Bearing surface 16% of exterior circumference for all pipe.
- C. Concrete Encasement
 1. Use only where specified or required by Engineer.
 2. Pour concrete beneath and around pipe.
 3. Encase pipe with minimum of 6" thickness, or for full width of trench bottom.

3.2 PIPE LAYING

- A. Install to line and grade as staked by Engineer.
- B. Lay butt joint tile with no more than 1/4" space between tiles.
- C. Lay tongue and groove pipe with tongue bearing against shoulder of bell.
- D. Fill excess excavation below grade line with thoroughly tamped clay in lifts no more than 6" deep or with granular bedding material.
- E. Initial Backfill or Blinding
 1. Place selected material and hand tamp under and around tile to at least 12" above top of tile.
 2. Blind tile as soon as possible.
 3. Blind all tile by end of day's work.
 4. Blind with care to not disturb tile alignment.
 5. Increase blinding depth where trench caving is suspected.
- F. Protection during installation:
 1. Cover ends of unfinished tile lines with metal or wooden plate at end of day's work.
 2. Plug completed ends of tile lines tightly with manufactured plug, plate or some other suitable material approved by Engineer.
 3. Keep tile clean of all dirt and foreign material.

3.3 COUNTY ROAD CROSSING

- A. Use reinforced concrete pipe.
- B. Construct in accordance with special instructions furnished by County Engineer and noted on plans.
- C. Notify County Engineer when ready to make crossing.
- D. Jack or auger in place where shown on plans in accordance with Section 2553, Iowa Department of Transportation Standard Specifications.
- E. Fill upper 24" of open cut through roadway with compacted crushed limestone or rock.
- F. Shape road ditches to drain. Leave entire right-of-way in a neat and workmanship like manner.
- G. Dispose of excess excavation.

3.4 JUNCTION BOXES

- A. Construct according to Standard Drawing D-20. Use alternate cover.
- B. Construct at location designated by Engineer.

3.5 CRADLING ROCK

- A. Place where unstable conditions encountered in bottom of ditch.
- B. Place only where approved by Engineer.
- C. Place to depth determined by Engineer.

3.6 EXPLORATORY TIME

- A. Provide labor and equipment to expose or to locate existing tile.
- B. Location as designated by Engineer.
- C. If excavated area needs backfilling for further trenching operation such use of equipment and labor is incidental to exploratory time.

3.7 EXISTING DRAIN TILE

- A. Connect to new drain tile Main or Lateral
 - 1. Material: corrugated polyethylene tubing.
 - 2. Size of tubing: use one size larger than existing tile
 - 3. Make connections water tight at both ends by using concrete collar.
 - 4. Cut end of connecting tubing to shape of Main or Lateral so as not to impede flow.
 - 5. Connect tubing to Main or Lateral to provide a center-to-center connection or higher with at least a minimum flow line differential elevation of 0.3 feet.
 - 6. Plug downstream end of existing tile at ditch bank with Portland Cement Concrete.
- B. Provide Engineer with all locations where tile has been connected to new Main or Lateral as well as location of plugs. Locations to be identified by stationing at connections, size of connecting pipe, quantity of pipe and direction of flow.

END OF SECTION

**SECTION 33 4624
DRAINAGE GEOTEXTILES**

PART 1 GENERAL

1.1 GENERAL

- A. This work shall consist of furnishing and installing non-woven geotextiles as shown on the plans or as specified herein.

1.2 REFERENCE SPECIFICATIONS

- A. All reference to ASTM, Iowa Department of Transportation or Federal specifications shall be to the latest specifications shall be to the latest specifications or methods of test adopted by these agencies for the materials indicated.

PART 2 MATERIALS

2.1 MATERIALS

- A. The geotextile shall conform to the requirements listed in IDOT Spec. 4196, Section 01100, this Section and the requirements shown on the Plans.
 - 1. The geotextile shall meet the physical requirements of Table 1.
 - 2. The geotextile shall be free of holes, tears, defects, and patch-repairs of defects.
 - 3. The geotextile shall be composed of needle-punched, discontinuous (staple) fibers or continuous fibers. Fibers used in manufacture of the geotextile shall consist of a material composed of at least 85 percent by weight polyolefins, polyesters, or polyamides.
 - 4. The geotextile and threads used in sewing the geotextile (if necessary) shall be chemically resistant to commonly encountered hazardous and municipal landfill leachate, rot and mildew.
 - 5. The geotextile and threads used in sewing the geotextile (if necessary) shall also contain stabilizers or inhibitors to limit degradation due to ultraviolet (UV) light exposure.
 - 6. Polymeric thread used for sewing (if necessary) shall exhibit chemical and UV resistance equal to or exceeding that of the geotextile and shall be of contrasting color to the geotextile being sewn.

2.2 SUBMITTALS

- A. The geotextile materials supplied under these specifications shall be first quality products specifically manufactured for filtration applications and shall have demonstrated by prior use their suitability for such applications.
- B. Submittals from Manufacturer
 - 1. The geotextile Manufacturer shall provide at least three (3) references of geotextile used in similar projects.
 - 2. Prior to installation, the geotextile Manufacturer shall provide certification that the geotextile material meets or exceeds the specified minimum average roll values provided in Table 1.
 - 3. The Manufacturer shall also provide certified laboratory test data for the following properties measured in accordance with the procedures listed in Table 1 at a minimum frequency of one (1) test per 100,000 ft² of geotextile produced.
- C. Submittals by installer
 - 1. The installer of the geotextile shall provide certified records of successfully installing geotextile in similar applications.

PART 3 EXECUTION

3.1 DELIVERY, HANDLING AND STORAGE

- A. The geotextile shall be labeled, stored, and handled in accordance with ASTM D-4873, "Guide for Identification, Storage, and Handling of Geotextiles."
- B. Each roll shall be marked or tagged to identify the manufacturer, type, length, width and production identification number.
- C. The geotextile shall be kept dry and wrapped in a waterproof wrapping such that it is protected from UV Light and the elements during shipping and storage. Torn wrappers shall be repaired within 48 hours, using an approved protective covering.
- D. Geotextile rolls shall be stored in a manner which protects them from the elements.

- E. If stored outdoors, geotextiles shall be elevated and protected with a waterproof, opaque cover.
- F. The Contractor shall keep the geotextile in its protective covering until it is ready for installation.
- G. The Contractor shall handle all geotextiles in such a manner as to ensure the geotextile is not damaged.

3.2 INSTALLATION

- A. The geotextile shall not be installed until conformance test results are reviewed and the geotextile is approved by the Owner, Engineer, and other Owner Representative.
- B. The surface on which the geotextile is to be placed shall be prepared to a smooth condition free of debris or obstructions which may cause damage to the geotextile.
- C. The surface on which the geotextile is to be placed shall be free of holes, depressions, muddy conditions or standing or flowing water.
- D. The surface shall be approved by the Owner, Engineer, or other Owner Representative prior to geotextile placement.
- E. Care shall be taken not to entrap stone, excessive dust, or moisture in the geotextile.
- F. The Contractor shall not operate equipment directly on the geotextile. Trimming of the geotextile should be performed in a manner that will not damage underlying materials.
- G. Geotextiles shall be deployed free of wrinkles and folds.
- H. On slopes, the geotextiles shall be anchored at the top and unrolled down the slope. Louvers:
 - I. In the presence of wind, all geotextiles shall be weighted with sandbags or other material which will not damage the geotextile.
- J. Geotextile uplifted by wind may be reused upon approval by the Owner, Engineer, or other Owner Representative.
- K. The geotextile shall be examined over the entire surface after installation to ensure that no potentially harmful objects are present.

3.3 FIELD SEAMING

- A. All geotextile seams shall be heat bonded or sewn unless specified in Section 01100. Note that this requirement does not pertain to geotextile installed as part of a drainage net.
 - 1. On slopes greater than 10:1 (horizontal:vertical), all seams shall be oriented parallel to (in the direction of) the slope. Seams constructed perpendicular or transverse to the direction of the slope will not be accepted.
 - 2. All seam must be approved by the Owner, Engineer, or other Owner Representative.
 - 3. The installer shall ensure that no soil materials are present within seams or overlaps.
- B. Heat Bonded Seams
 - 1. Continuous seams or spot tacking welds may be used as required in Section 01100.
 - 2. For spot tacking welds, the geotextile shall be tacked together at least once for each five (5) foot of geotextile seam length.
 - 3. Geotextile panels shall be overlapped a minimum of six (6) inches for heat bonded seams or as specified in Section 01100.
 - 4. Geotextile panels shall be completely clean and dry prior to seaming. Heat bonding shall not be performed during rain, snow, or at temperatures below freezing.
 - 5. Any location where the heat bonding process has melted through either geotextile panel shall be repaired at no cost to the Owner.
- C. Sewn Seams
 - 1. Seams shall be sewn using a Federal Type 401 stitch. One (1) or two (2) rows of stitching maybe used. Each row of stitching shall consist of four (4) to seven (7) stitches per inch.
 - 2. The minimum seam allowance (i.e., the minimum distance from the geotextile edge to the stitch line nearest to the edge) shall be 1.5 in. if a Federal Type SSa (prayer or flat) seam is used. The minimum seam allowance for all other sewn seam types shall be 1.0 inch.

3.4 ANCHORING

- A. The geotextile shall be anchored per Manufacturer's recommendations.

3.5 REPAIRS

- A. Damaged geotextiles and geotextiles contaminated with dirt shall be repaired immediately at no cost to the Owner.
 - 1. Repairs shall be made with the same geotextile product style as the original material.
 - 2. All repairs shall meet the approval of the Owner, Engineer, or other Owner Representative prior to cover placement.
 - 3. Slopes less than or equal to 10:1
 - a. Damaged areas of a size exceeding ten (10) percent of the roll width shall be removed and replaced across the entire roll width with new material.
 - b. Damaged areas of a size less than ten (10) percent of the roll width may be patched.
 - 1) All patches must extend a minimum of 18 inches beyond the damaged area in all directions.
 - 2) The patch shall be spot sewn or heat bonded so as not to shift out of position during cover placement.
 - 4. Slopes great than 10:1
 - a. Geotextile panels which require repair shall be removed and replaced with new material.
 - b. Replacement material shall be sewn as previously described in this specification.
 - c. All seam shall be oriented parallel to (in the direction of) the slope.
 - d. Seams constructed perpendicular or transverse to the slope will not be accepted.

3.6 PLACEMENT OF COVER MATERIALS

- A. Placement of cover (soils, rock backfill, select waste, geotextile, or geomembrane) on the geotextile shall be accomplished in a manner so as to ensure that the geotextile is not damaged.
- B. Cover material shall be laced within the time period specified in the contract documents. If no other time constraints are specified, the geotextile shall be covered within 14 days.
- C. Geotextile exposure periods may exceed 14 days when approved by the project design engineer based on evaluation of geotextile resistance to UV degradation and on local environmental conditions.
- D. The cover shall meet the material requirements of the contract documents and shall be approved by the Owner, Engineer, or other Owner Representative prior to placement.
- E. Cover material shall be placed such that excess tensile stress is not mobilized in the geotextile.
- F. Cover placement operations shall comply with the requirements and limitations of the contract documents and project design documents.
- G. Low ground pressure ($5 < \text{lbs/in}^2$) equipment shall be used to place soil or select waste cover. Soil or select waste cover thickness on the geotextile shall be greater than or equal to 1.0 ft. prior to operation of low ground pressure equipment. When approved by the project design engineer, higher ground pressure ($< 5 \text{ lb/in}^2$) equipment may be operated on the soil or select waste cover in accordance with the cover thickness requirements provided in Table 2.
- H. On slopes steeper than 10:1, soil or select waste cover shall be placed beginning at the bottom of the slope and extending upward.

3.7 APPROVAL

- A. The geotextile fabric shall be accepted by the Owner when all of the following conditions are met
 - 1. Installation is finished.
 - 2. Verification of the adequacy of all field joints and repairs is complete.
 - 3. As built drawings are provided to the Owner as required.
 - 4. All other work associated with the project has been completed in accordance with the Contract Documents.

END OF SECTION

SECTION 33 4910
DRAINAGE STRUCTURES

PART 1 GENERAL

1.01 GENERAL DESCRIPTION OF WORK

- A. Furnish and install all materials, precast sections, cast-in-place section, castings and related items for manholes, intakes, junction boxes and other drainage appurtenances.
- B. Furnish and install all culvert work including extensions to existing culverts.
- C. Provide transportation and handling, excavation, backfill, compaction, dewatering, sheeting, shoring, utility repair and/or relocation, surface restoration and miscellaneous associated work.

1.02 SUBMITTALS

- A. Refer to Section 033000 for required submittals and testing of concrete work.
- B. Furnish manufacturer's certificates for precast concrete sections, culvert pipe and metal castings.

1.03 QUALITY ASSURANCE

- A. Comply with latest published editions of American Society of Testing Materials (ASTM) Standards as referenced.
- B. Comply with latest published editions of American Association of State Highway and Transportation Officials (AASHTO) Standards as referenced.

1.04 P2 MATERIALS

1.05 CONCRETE AND REINFORCING STEEL

- A. Comply with Section 033000 of specifications.

1.06 PRECAST CONCRETE MANHOLES AND STRUCTURES:

- A. Comply with ASTM C478 for manhole sections.
- B. Use concrete as specified in Section 034100 for other precast sections.
- C. Provide pipe blockouts, cast-in specialties and access openings required.

1.07 BLOCK

- A. Use solid, precast concrete.
- B. Nominal sizes will be 2"x4"x8", 4"x8"x16" and 8"x8"x16". Other sizes will be in multiples or fractions thereof.
- C. Comply with ASTM C139 and C140.

1.08 MORTAR

- A. Use one part Portland cement to two parts sand.
- B. Add water to provide workable consistency.

1.09 CASTINGS

- A. Use gray cast iron; comply with AASHTO M105.
- B. Provide specific frames, covers and grates where shown as manufactured by Neenah Foundry Company or equal:
 - 1. Heavy duty manhole ring and cover, R-1670.
 - 2. Heavy duty manhole ring and cover, R-1792.
 - 3. Light duty manhole ring and cover, R-1737.
 - 4. Type A intake casting, R-3067-DR or DL grate.
 - 5. Type B intake casting, R-3510.
 - 6. Type F intake casting, R-4353 without frame.
 - 7. Type K intake casting, R-4915-C.
 - 8. Double Type L intake casting, R-3295-A with DR or DL grates.
 - 9. Steps, R-1980-E.
 - 10. Telescoping manhole ring and cover, R-1673-A.
 - 11. Type T-3 Back, East Jordan Millworks for driveway/lip curb locations.

- C. Use standard castings differing in nonessential details as approved by Engineer.

1.10 CULVERT PIPE AND APRONS

- A. Precast Reinforced Concrete:
 - 1. Conform to size, shape and material of connecting pipe.
 - a. Circular: ASTM C76.
 - b. Arch: ASTM C506.
 - c. Elliptical: ASTM C507.
 - 2. Strength: Class II.
- B. Corrugated Metal:
 - 1. Conform to size, shape and material of connecting pipe.
 - 2. AASHTO M36, Type I, 16 Gauge minimum.

PART 3 EXECUTION

2.01 EXCAVATION

- A. Keep area of excavation around structure as narrow as possible; provide adequate room for backfilling, and compaction adjacent to structure.
- B. Maintain side walls as nearly vertical as practical within safety codes. Sheet, shore and/or brace as necessary to maintain adequate safety.
- C. Unstable Material: When unstable or questionable material is encountered:
 - 1. Notify Engineer immediately.
 - 2. Engineer will investigate questionable material to determine its suitability for structure foundation.
 - 3. If material is considered unsuitable for foundations, Engineer will specify and authorize remedial measures in writing.
 - 4. If removal of unsuitable material is authorized:
 - a. Replace with granular bedding.
 - b. Authorized over excavation and stabilizing material will be paid for as granular bedding if bid item is available or via change order.
- D. Dewatering:
 - 1. Place no fresh concrete or precast concrete foundations on excessively wet soil.
 - 2. Prevent surface water from flowing into excavation; remove water as it accumulates.
 - 3. Divert stream flow away from areas of construction.
 - 4. Do not pump water onto adjacent property without approval of Engineer and adjacent property owner. Do not use sanitary sewers for disposal of trench water.
 - 5. Dewatering is incidental to construction of drainage structures.
- E. Rock Excavation:
 - 1. Excavate rock to a sufficient depth below invert to provide adequate room for foundation as specified.
 - 2. Dispose of rock material unsuitable for backfill as directed by Engineer.
 - 3. Use of explosives:
 - a. Submit plan outlining use for approval.
 - b. Proceed only after authorization by Owner and Engineer.

2.02 STRUCTURE INSTALLATION

- A. Verify location, size, type, flow lines, orientation, and dimensions before proceeding.
- B. Conform to details shown on standard drawings. Where alternate methods of construction are allowed verify method to be used with Engineer.
- C. Grout or seal joints as specified.
- D. Place concrete invert in structure as required. Shape to drain from flow line to flow line.
- E. Provide intermediate covering for openings where castings will not be. Prohibit direct vehicular traffic loading on structure until casting/cover is placed.
- F. Provide and place adjusting rings and/or block to bring casting/cover to final grade.
- G. Back plaster as indicated on the details or as directed by the Engineer. Plastering to be accomplished in a neat and workmanlike manner.

2.03 PIPE CONNECTIONS

- A. Make watertight. Place concrete collar as required.
- B. Support first sections of pipe from structure until adequate bedding is attained.

2.04 PIPE STUB-OUT

- A. Construct stub outs from structures as shown on the plans or required by Engineer.
- B. Use one section of pipe with size, strength and material specified.
- C. Install plug or stopper at outer end. Seal in place.

2.05 CULVERT AND CULVERT EXTENSIONS

- A. Install culvert extensions and culverts in locations and to grades shown or established by Engineer.
- B. Provide concrete collar for joining old concrete pipe to new where regular joint is damaged. Use metal bands for joining CMP.

2.06 BACKFILL

- A. Place no backfill until structure has been inspected for line, grade, connections, etc.
- B. Use suitable material approved by Engineer, free from lumps, rocks, excessive vegetation, debris, etc.
- C. Place backfill symmetrically around structure so as not to disturb alignment and/or plumb.
- D. Hand compact backfill with a mechanical tamper.
- E. Compact backfill under roadways to 90% Standard Proctor Density to within 2' of subgrade. Compact upper 2' to subgrade to 95% Standard Proctor Density.
- F. Areas other than pavement: Compact to 90% Standard Proctor Density, top 12" of backfill equivalent to adjacent soil, suitable for seeding or sodding.

END OF SECTION

MEASUREMENT AND PAYMENT

SECTION 01 2210
MEASUREMENTS AND PAYMENT

1. CLASS 10 EXCAVATION FOR BACKFILL OF TILE BLOWOUTS:

- a. Measure in cubic yards; Volume measured by truck loads of determined size. Size of truck loads will be estimated and truck loads will be counted. Material may be obtained from ditch excavation if sufficient quantity exists or from a contractor supplied borrow. Item includes topsoil stripping, salvaging and spreading where necessary. No payment for overhaul will be considered.
- b. Includes providing all labor, tools, materials and equipment required to excavate material, transport, place and deposit material to fill tile blow out areas.
- c. The top 12" (minimum) of the backfilled hole shall be topsoil and obtained from the open ditch spoil area or contractor supplied borrow.
- d. Payment: Unit price bid per cubic yard excavated based upon the above described measurements.

2. OPEN DITCH EXCAVATION:

- a. Measure in cubic yards; 110% of volume measured by average end area method using cross sections taken for the preparation of the plans. Volume includes a one-half foot of channel under-cut and that displaced by riprap blankets, drop spillways and similar structures. Volume has been computed through culverts and bridges. Extra 10% is for anticipated over excavation usually needed to maintain grade and make minor corrections in ditch alignment. Does not include topsoil stripping volume where that separate work item is specified. Quantities shall be considered final and no payment for overhaul will be considered.
- b. Includes providing all labor, tools, materials and equipment required to excavate and deposit spoil, excavate and deposit beaver dams and silt/sand bars, shape and slope open ditch, remove spoil from culverts and bridges, construct access roads and repair overbank washouts.
- c. Includes the excavation of the basin at the head of the ditch and the shaping of the ground to the inlet of the drop structure.
- d. Includes disposal of rock piles and miscellaneous clearing and grubbing in the work area when that work is not separately bid.
- e. Includes removal & disposal of fence remnants classified as rubbish.
- f. Payment: Unit price bid per cubic yard excavated based upon the above described measurements.

3. SPOIL BANK LEVELING:

- a. Measure in 100 feet stations along open ditch centerline with no deduction for public road right-of-way, intersecting open ditches or drains, private crossings or similar. Newly excavated spoil material on one or both sides included.
- b. Includes providing all labor, tools, materials and equipment required to level, slope, shape, till and finish existing and newly excavated spoil to plan requirements. Also includes the cleanup of trash, rocks, rubble, etc. exposed during excavation and leveling operations.
- c. Payment: Unit price per station completed.

4-6. CORRUGATED METAL PIPE SURFACE DRAIN:

- a. Measure in lineal feet along centerline of newly furnished pipe. Fractions of feet disregarded.
- b. Includes all labor, tools, material and equipment required to remove and dispose of any existing pipe or tile to be replaced, and to perform necessary trench excavation, installation of new pipe with coupling bands, backfilling, shaping and miscellaneous associated work as required to complete the work and provide drainage.

- c. This item pertains only to new pipes used in surface drain installations. Coupling bands joining two new pipe sections are subsidiary to this item.
- d. Includes placement of fill where bank has been severely eroded around existing pipe.
- e. Includes movement of materials and equipment as required to complete the work.
- f. Contractor shall endeavor to limit furnished pipe to that specified at each site. Unless otherwise allowed by engineer, payment in excess of the plan quantity at each site will not be approved.
- g. Payment: Unit price per linear foot installed.

7-9. CORRUGATED METAL PIPE SURFACE DRAIN APRON:

- a. Measurement: Each type and size of pipe apron will be counted.
- b. Includes providing all labor, tools, materials and equipment required to install CMP Apron including excavation, shaping, connecting and finishing existing and newly excavated spoil to plan requirements. Includes shaping of the drainage ditch bank around the end of the pipe.
- c. Payment: Unit price per each size and type installed.

10-12. CORRUGATED METAL PIPE TILE EXTENSION:

- a. Measure in lineal feet along centerline of newly furnished pipe. Fractions of feet disregarded.
- b. Includes all labor, tools, material and equipment required to uncover, remove and dispose of any existing pipe or tile to be replaced and to perform necessary trench excavation, installation of new pipe with connection to drain tile, backfilling, shaping and miscellaneous associated work as required to complete the work.
- c. Includes necessary coupling bands and connections.
- d. Includes placement of fill where bank has been severely eroded around existing pipe.
- e. Includes movement of materials and equipment as required to complete the work.
- f. Contractor shall endeavor to limit furnished pipe to that specified at each site. Unless otherwise allowed by engineer, payment in excess of the plan quantity at each site will not be approved.
- g. Payment: Unit price per linear foot installed.

13. REINFORCED CONCRETE PIPE, CLASS 3:

- a. Measurement in lineal feet to the nearest foot along centerline for each size and classification of Reinforced Tongue and Groove Concrete Pipe (RCP) installed. Includes linear measurement through alignment turns, prefabricated elbows and tee sections.
- b. Except where topsoil stripping is identified as a bid item, includes segregation, stockpiling and respreading of topsoil sufficient to achieve a 12" typical cover. See construction notes.
- c. Includes trench excavation for RCP placement, trench bottom shaping, removal and disposal of rocks, removal and disposal of trees, brush and miscellaneous other minor obstacles in the way of the work; dewatering; furnishing and placement of RCP; furnishing, placement and compaction of suitable material around pipe up to the spring line as per the required trench installation types illustrated on the plans; backfilling remainder of the trench above the pipe spring line, and the final shaping of the ground surface to form a small mound over the trench to account for settlement and toward the goal of restoring ground surface contours.
- d. Includes furnishing, installation and compaction of gravelly sand in RCP haunch areas where trench installation type 3 is used or required. Includes furnishing in advance of the work a sample of the gravelly sand material and either a gradation report or the supplier's certification of compliance with the specifications.
- e. Includes the furnishing, installation and compaction of crushed rock bedding stone around the pipe where contractor has caused the trench width to be wider than specified on the plans. See construction notes. Unless more accurate information is available, Engineer, with contractor's assistance, will estimate the amount of bedding stone used in these situations which will be deducted from the documented amount of pipe bedding rock furnished and installed for payment under bid item tile trench cradling rock.

- f. Includes necessary crop knockdown and removal if necessary to accommodate access, staking materials delivery or construction and weed control in the work limits sufficient to prevent weeds from going to seed.
- g. Includes the excavation, removal and disposal by burial or other approved means of miscellaneous subsurface tile drain line segments encountered during installation. Includes the plugging or capping of the upstream end of intercepted tile drains which continue to drain away from the work which are not included in lateral connection bid items.
- h. Includes dewatering or other means to control water during the installation.
- i. Includes all safety measures not provided for in other bid items.
- j. Includes providing the services of a qualified independent testing lab to provide the soil proctor and soil density testing required of the contractor and all other equipment, labor and materials required to carry out the pipe haunch area fill and compaction method plan compliance verification requirements as described on sheet no. B.01 of the constructions plans.
- k. Payment: Unit price bid per foot for each size and classification of RCP furnished and installed.

14. REINFORCED CONCRETE PIPE, 27" DIA, CLASS 3 FOR TILE REPAIR:

- a. Measurement: Lineal feet to the nearest foot along centerline for each size and classification of tile installed.
- b. Includes segregation, stockpiling and re-spreading of topsoil sufficient to achieve a 12" typical cover where open cut trench installation is used. See Construction Notes.
- c. Includes trench excavation for tile placement; dewatering; furnishing and placement of tile specified; furnishing, placement and compaction of suitable material around pipe up to the spring line as per the required trench installation types illustrated on the plans; backfilling remainder of the trench above the pipe spring line, and the final shaping of the ground surface to form a small mound over the trench to account for settlement and toward the goal of restoring ground surface contours.
- d. Includes concrete collars required to connect existing lines to each other as subsidiary to this item.
- e. Includes the furnishing, installation and compaction of crushed rock bedding stone around the pipe where contractor has caused the trench width to be wider than specified on the plans. Unless more accurate information is available, Engineer, with contractor's assistance, will estimate the amount of bedding stone used in these situations which will be deducted from the documented amount of pipe bedding rock furnished and installed for payment under bid item tile trench cradling rock.
- f. Includes necessary crop knockdown and removal if necessary to accommodate access, staking, delivery of materials or construction and weed control in the work limits sufficient to prevent weeds from going to seed.
- g. Includes the excavation, removal and disposal by burial of other approved means of miscellaneous subsurface tile drain line segments encountered during installation. Includes the plugging or capping of the upstream end of intercepted tile drains which continue to drain away from the work and which are not included to lateral connection bid items.
- h. Includes all safety measures not provided for in other bid items.
- i. Payment: Unit price bid per foot for each size and classification of tile furnished and installed.

15. LATERAL TILE CONNECTIONS:

- a. Measurement: For each necessary connection made.
- b. Includes all labor, tools, equipment and materials to make the specified connections between the existing private tile laterals and the new tile main, including; excavation, trench bottom shaping, cutting and fitting of tile, placement of concrete collars, placement and blinding of tile, compaction of soil bedding & envelope, trench backfill, the keeping and delivery of a log of connections made, and miscellaneous associated work necessary to complete item.

- c. Includes extending all tile lines connected to the existing main tile exposed during the exposure and crushing in place.
- d. Does not include furnishing or installation of crushed rock bedding and envelope, where required, payable under bid item tile trench cradling rock.
- e. The capping of the downstream end of the existing drain tile line is subsidiary to this item.
- f. Payment: Unit price bid for each connection made.

16. IDOT SW-401, CIRCULAR STORM SEWER MANHOLE:

- a. Measurement: Lump sum for completed furnishing of materials and installation of structure and all appurtenances as shown on the plans and the standard drawings.
- b. Includes furnishing and installing structure as specified and all labor, equipment and other materials required for installation. Includes casting.
- c. Includes one section of new pipe to connect existing pipes to manhole.
- d. Includes furnishing and installing crushed rock backfill placed to bridge pipe across the excavated hole.
- e. Payment: Paid as lump sum for completed installation.

17. REINFORCED CONCRETE PIPE MANUFACTURED ELBOWS:

- a. Measurement: For each staked tee, elbow apron section or endcap installed or alignment turn made.
- b. Includes furnishing all labor, tools, equipment and materials required to complete the installation of the item.
- c. Includes manufactured elbows or pipe tee sections needed to make the required change in alignment. Also includes any extra excavation, cutting and fitting, backfill, compaction, and miscellaneous work necessary to make the connections.
- d. Elbows and Tees do not include material costs of the RCP which is measured and paid under the applicable drain tile bid item.
- e. Payment: Unit price bid for each fitting furnished & installed.

18. ALUMINUM DROP STRUCTURE:

- a. Measurement per completed job.
- b. Includes furnishing all equipment, materials and labor for excavating, shaping, installation of aluminum drop structure, and all items associated with the drop structure as shown on the plans and standard details including the berm to be built with excavated materials to direct surface water to the new weir structure. Includes riprap and geotextile fabric.
- c. Payment: Lump Sum

19. CRUSH IN PLACE AND BURY EXISTING MAIN TILE:

- a. Measurement: Lineal feet to the nearest foot along centerline of the existing main tile crushed in place.
- b. Includes all labor, tools, equipment and materials to expose, crush in place and bury in place the existing main tile.
- c. Includes the restoration and final shaping of the ground surface to form a small mound over the trench to account for settlement and toward the goal of restoring ground surface contours.
- d. Payment: Unit price bid per foot of existing tile crushed and buried.

20. REMOVAL OF HEADWALL:

- a. Measurement per completed job.
- b. Includes furnishing all equipment, materials and labor for removal and disposal of headwall structure including all necessary excavating and shaping.
- c. Material shall remain the property of the contractor.
- d. Payment: Lump Sum

21. RIPRAP, IDOT CLASS E:

- a. Measurement: Per ton delivered and placed. Weigh tickets will be required.
- b. Includes furnishing material and all labor, tools and equipment necessary for the placement of the erosion control riprap in rock chutes and channel armoring locations noted on plans and directed by the Engineer.
- c. Does not include excavation, shaping and forming of ditch bank slope prior to placement of the riprap, but does include the blending of the riprap layer into the edges of the previously excavated area.
- d. Includes hand placement around tributary pipes, bulkheads and other structures where required.
- e. Payment: Unit price per ton placed.

22. GEOTEXTILE/ENGINEERING FABRIC:

- a. Measurement by square yard of specified material furnished and properly placed as shown on the drawings.
- b. Includes all labor, tools, material and equipment required for placement of geotextile fabric on all earth surfaces under the erosion stone as shown on the drawings.
- c. Payment: Unit price bid per square yard placed.

23. SPOT TILE EXPLORATION:

- a. Measurement by the hour of equipment time.
- b. Includes all labor, tools and equipment required to excavate and explore for existing drain tile under the direction of the engineer.
- c. No measurement beyond the areas indicated on the plans will be made, Contractor is encouraged to make his own measurement if in doubt and to bid accordingly.
- d. Payment by the hour of equipment time used under the direction and in the presence of the engineer in the field.

24. CLEARING AND GRUBBING:

- a. Measurement by job successfully completed.
- b. Includes all labor, tools and equipment required to clear and grub and dispose of all trees, stumps, logs, down timber, hedges, shrubs, brush, herbaceous vegetation, rocks, fence rubbish, junk and rubble, miscellaneous rubbish and required grading, shaping and cleanup within the work limits as specified.
- c. Unless otherwise noted on plans, contractor shall have salvage rights to all machinery or similar large items stored or abandoned within the work limits. Disposal of such items is subsidiary to Clearing and Grubbing.
- d. Includes as subsidiary the disposal of all rock or junk piles in the right-of-way and the removal and disposal of rubbish fence.
- e. Because continuous ditch excavation is not planned, in some areas, contractor is expected to more completely pick up debris than would otherwise be required.
- f. Payment: Percentage of Lump Sum bid according to work completed as determined by Engineer.

25. OPEN DITCH FERTILIZING AND SEEDING:

- a. Measure in 100 foot stations of disturbed open ditch banks on both sides along centerline of the open ditch with no deduction for public road right-of-way, intersecting open ditches or drains, private crossings or similar items. Also includes seeding all road right-of-way disturbed during completion of this work.
- b. Includes furnishing specified fertilizer blend and seed mixes, bags, tags, germination tests and inoculates.
- c. Includes providing all labor, tools, materials and equipment required to secure, store, mix and apply the specified fertilizer and seed at the application rates specified.
- d. Item includes seeding of oats companion crop.

- e. Payment: Unit price per station completed.

26. OPEN DITCH MULCHING:

- a. Measure in 100 foot stations of disturbed open ditch banks on both sides along centerline of the open ditch with no deduction for public road right-of-way, intersecting open ditches or drains, private crossings or similar items. Also includes mulching all road right-of-way disturbed during completion of this work.
- b. Includes providing all labor, tools, materials and equipment required to secure, store, and apply the specified mulch at the application rates specified in Section 32 9221.
- c. Payment: Unit price per station completed.

27. TILE TRENCH STABILIZATION & CRADLING ROCK:

- a. Measurement: Tons of specified materials furnished and installed as verified by weigh tickets, rounded to nearest hundredth of a ton.
- b. Includes furnishing, stockpiling, transporting and installing the specified material; necessary shaping of the trench base, shaping and compaction of the material, equipment, tools and miscellaneous associated work needed to complete item.
- c. Does not include pipe bedding rock furnished and installed around the RCP where contractor has caused the trench width to be wider than specified on the plans. Unless more accurate information is available, Engineer, with Contractor's assistance, will estimate the amount of bedding stone used in these situations which will be deducted from the documented amount of pipe bedding rock furnished and installed for payment. Includes necessary rock used in completing alignment turns.
- d. Includes furnishing and installing crushed rock bedding and envelope where required for all lateral tile connections.
- e. Payment: Unit price bid for approved ton of material furnished and installed.

28. SILT FENCE:

- a. Measurement per lineal foot to the nearest foot.
- b. Includes furnishing silt fence and all labor, tools and equipment necessary for the placement of the silt fences. Fence to be installed as indicated on the plans or as directed by the Engineer. See Detail EC-201 for requirements.
- c. Subsidiary to this item is all necessary excavation for placement and labor and materials for maintaining the silt fence throughout construction time frame.
- d. Payment: Unit price bid per foot.

29. REMOVAL OF SILT FENCE:

- a. Measurement per lineal foot to the nearest foot.
- b. Includes removing silt fence and all labor, tools and equipment necessary for the removal of the silt fences after seed establishment.
- c. Material shall remain the property of the contractor.
- d. Payment: Unit price bid per foot.

30. FENCE CUT:

- a. Measurement: for each fence line encountered and cut as per construction notes.
- b. Includes all labor, tools, materials, and equipment required to pull posts, cut and flatten wire, and bury on-site.
- c. Payment: Unit price bid for each fence cut completed.

31. MOBILIZATION:

- a. This item shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all Contractor facilities necessary for work on the project; and for all other work and operations which must be performed, or cost incurred before beginning work on the various items on the project site including bonds, and

insurance. The amount of the lump sum bid price shall not exceed 5 percent of the Total Base Bid price.

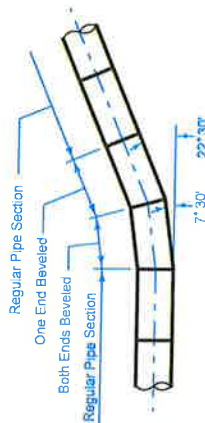
- b. Partial payment will be made for mobilization as follows:
 - 1. When 5 percent or more of the original contract amount is earned, 25 percent of the amount bid for mobilization will be paid.
 - 2. When 10 percent or more of the original contract amount is earned, 50 percent of the amount bid for mobilization will be paid.
 - 3. When 50 percent or more of the original contract amount is earned, 100 percent of the amount bid for mobilization will be paid.
 - 4. In all items above, the original contract amount shall be the total value of all contract items including the mobilization item, but the percentage earned in each case shall be exclusive of the mobilization item.
- c. Payment: Lump Sum Bid.

END OF SECTION

DETAILS

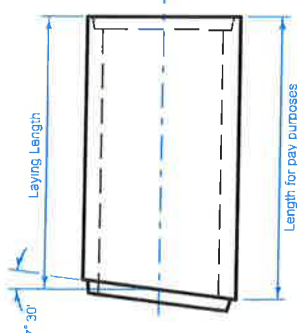


TYPICAL PLAN WITH ELBOW

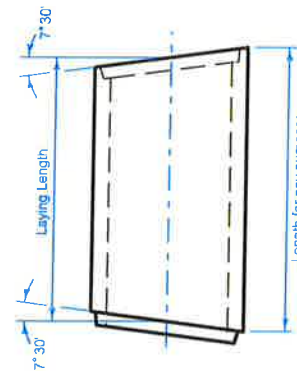


TYPICAL PLAN WITH "D" SECTIONS

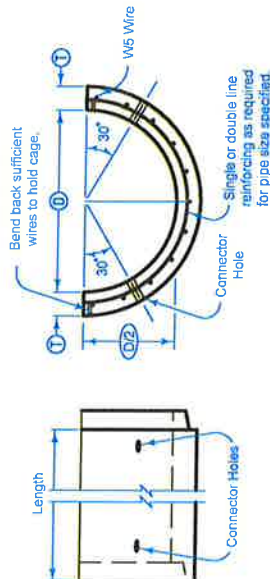
REINFORCING BARS		
Size "D"	Bar Size	Number Required
12" - 21"		4
24" - 42"		8
48" - 60"		8
66" - 84"		8



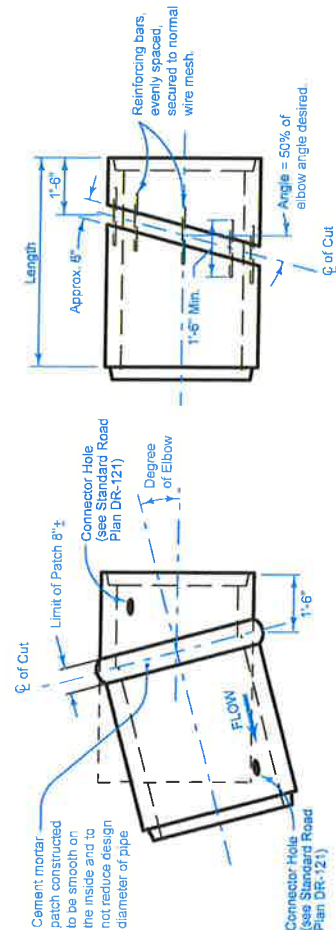
TYPE "D" SECTION (SINGLE BEVEL)



TYPE "D" SECTION (DOUBLE BEVEL)



DETAILS OF HALF PIPE SECTION



TYPICAL CONCRETE PIPE ELBOW

Fabricate concrete pipe elbows and Type "D" pipe sections according to AASHTO M 170 for the size and class of pipe specified. Meet the requirements of AASHTO M 32 for wire reinforcing.

Unless specified otherwise, bevel the Type "D" section on a 7.5 degree miter. The bevel may be provided on either the tongue and or groove end of the pipe. In certain cases, both ends of the pipe section may require the beveled end.

Type "D" pipe sections will be included in the measurement for pipe culvert. No payment will be made specifically for the Type "D" section bevel. This is incidental to the price bid.

The Contractor may substitute an approved elbow for "D" section bends of 15 degrees or less. Such elbows will not be measured for payment but will be considered incidental to price bid for culvert pipe.

Refer to the plans for degree of elbow required for each individual installation. Minimum length of elbow is to be 5'-6" measured along centerline of pipe. Design length of pipe will be considered to be 8'-0".

Fabricate elbows using a method approved by the Engineer and which results in a finished product indicated herein. The typical method for fabricating elbows is as follows: Steel rods, as specified, are attached to the normal wire reinforcing cage as indicated herein. After pipe is cast, make a cut 50% of the degree of elbow required and cut the reinforcing rods and mesh on centerline of the cut. Rotate the severed section of pipe 180 degrees and sewed the reinforcing to the opposite rods. Patch the remaining opening with cement mortar to complete a satisfactorily completed elbow as shown.

For pipe sizes up through 48" in diameter, bends may be accomplished in increments of 7.5 degrees by using standard "D" sections in appropriate combinations.

For pipe sizes from 54" to 72" in diameter, limit the "D" section to a maximum of 5 degree miter on any one end of pipe section.

For pipe sizes through 48" in diameter, bends from 15 to 45 degrees may be accomplished using a single elbow. Bends more than 45 degrees require two elbows unless approved otherwise by the Engineer.

Furnish half pipe complying with the requirements for 2000D (Class III) pipe and, unless specified elsewhere, fabricated with connector holes as indicated. Maximum "D" size for Half Pipe is 48 inches.

Minimum length of Half Pipe section is 4'-0". Normal length is 6'-0". Use the minimum number of 4'-0" sections to make up the necessary length of Half Pipe Flume.

Price bid for Half Pipe, per foot, is full compensation for furnishing and installing Half Pipe.

IOWA DOT

STANDARD ROAD PLAN

REVISIONS: New. Replaces SP-13.

APPROVED BY DESIGN METHODS ENGINEER

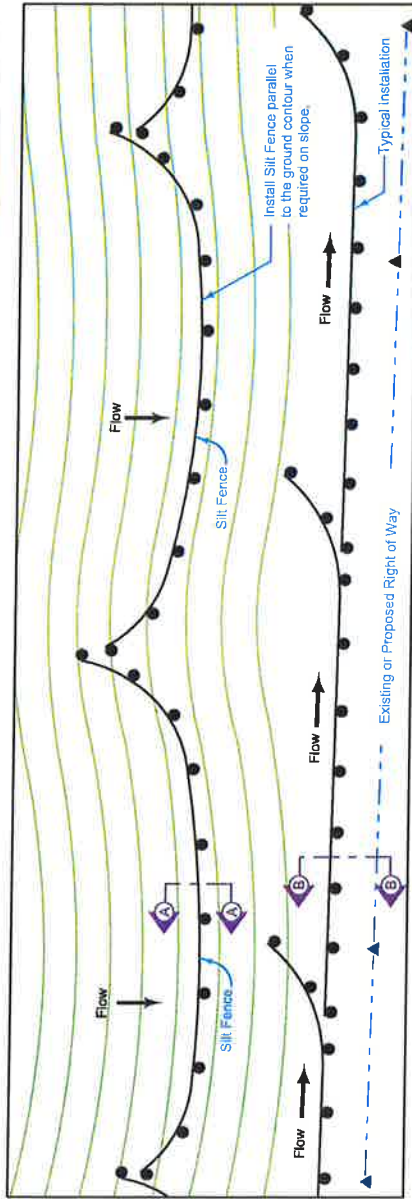
REVISION

New 04-21-15

DR-141

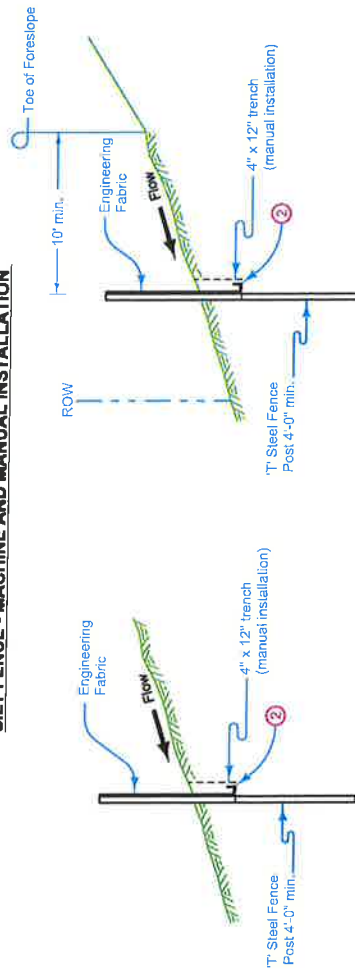
SHEET 1 of 1

PIPE BENDS AND HALF PIPE



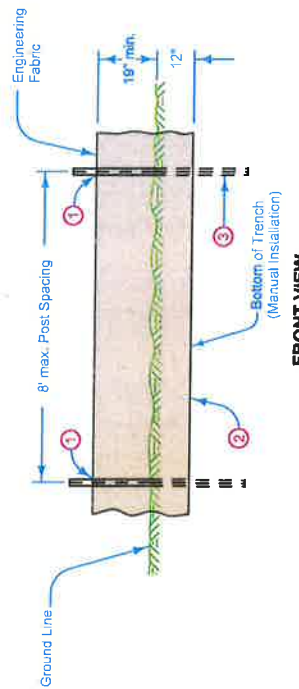
PLAN FOR SILT FENCE

SILT FENCE - MACHINE AND MANUAL INSTALLATION

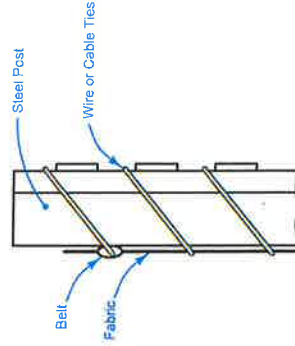


SECTION A-A

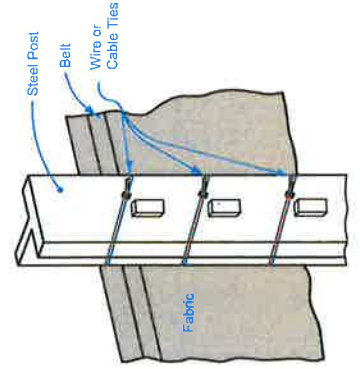
SECTION B-B



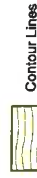
FRONT VIEW



PROFILE VIEW
ATTACHMENT TO POST



BACK VIEW
ATTACHMENT TO POST



Contour Lines

Possible Contract Items:
Silt Fence
Silt Fence for Ditch Checks
Possible Tabulations:
100-17
100-18

Install all silt fence using a silt fence machine. Use manual (trench) installation if physical conditions prohibit machine installation.

For machine installation, compact by driving over each side of silt fence at least two times with device exerting 60 p.s.i. or greater.

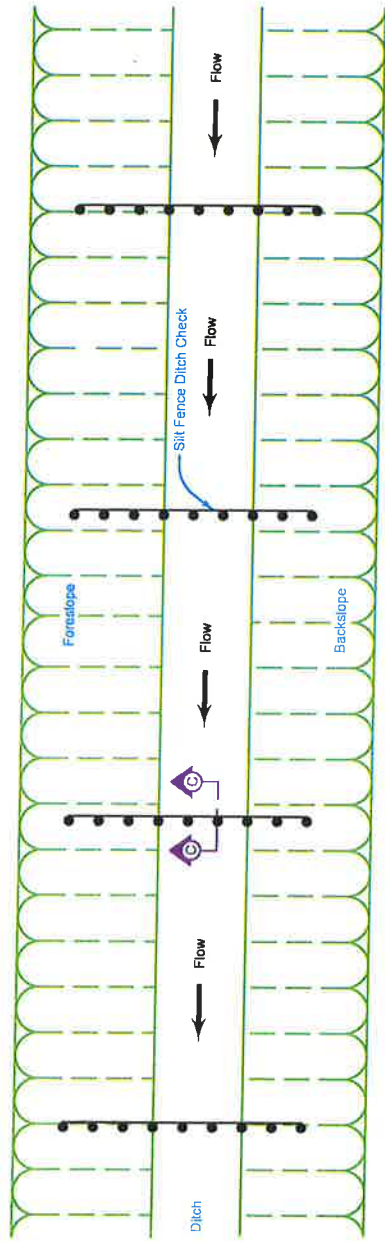
For manual installation, compact with a mechanical or pneumatic tamper.

Place silt fence continuously up to a maximum length of 200 feet. For every segment of silt fence that is placed, flare up the slope the last 20 feet of the segment to contain runoff as shown.

- ① Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire. See back view attachment to post.
- ② For manual installation only, fold engineering fabric along bottom of trench.
- ③ Embed all posts 28 inches below the ground line.

IOWA DOT	REVISION	1	04-21-15
	STANDARD ROAD PLAN	EC-201	SHEET 1 of 3
REVISIONS: Clarified top of all fence to be minimum of 15 inches above ground line. Added notes to identify the bottom of the trench (manual installation).			
APPROVED BY DESIGN METHOD ENGINEER			

SILT FENCE

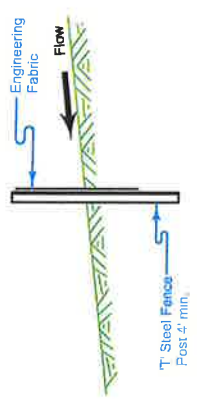


PLAN FOR DITCH CHECK

- 1 Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire. See attachment to post.
- 2 For manual installation only, fold engineering fabric along bottom of trench.
- 3 Embed all posts 28 inches below the ground line.
- 4 Locate posts at toe of foreslope and toe of backslope and space remaining posts equally.
- 5 The minimum and span of ditch check from the toe of slope is as shown below:

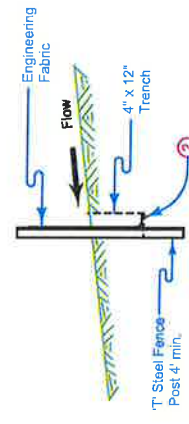
Exposlope or Backslope	Width
6:1	12'
6:1/3.5:1	10'
6:1/3:1	9'
3.5:1	7'
3:1	6'

DITCH CHECK - MACHINE INSTALLATION

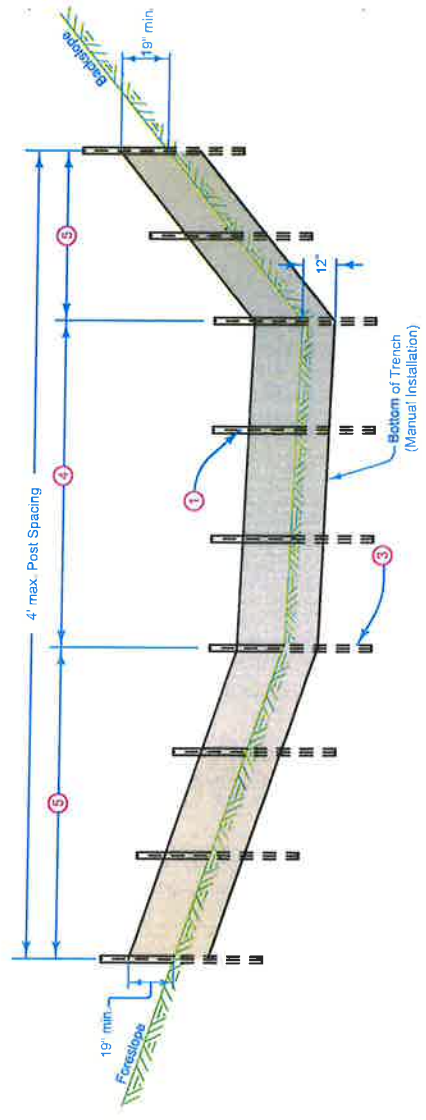


SECTION C-C

DITCH CHECK - MANUAL INSTALLATION



SECTION C-C



FRONT VIEW

STANDARD ROAD PLAN

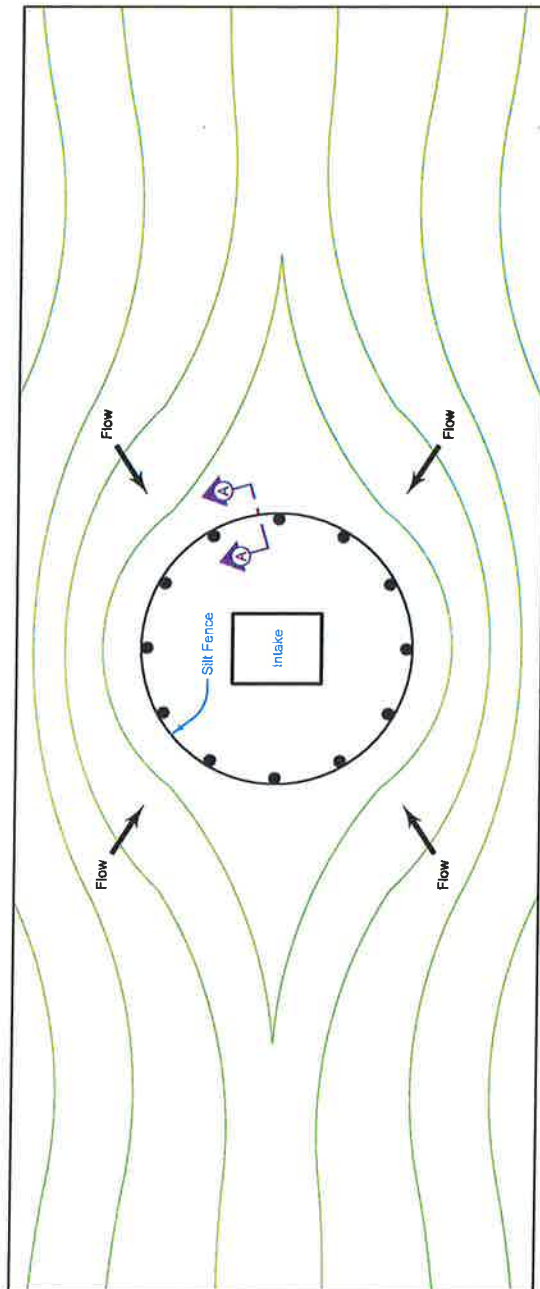
REVISION
1 04-21-15

EC-201

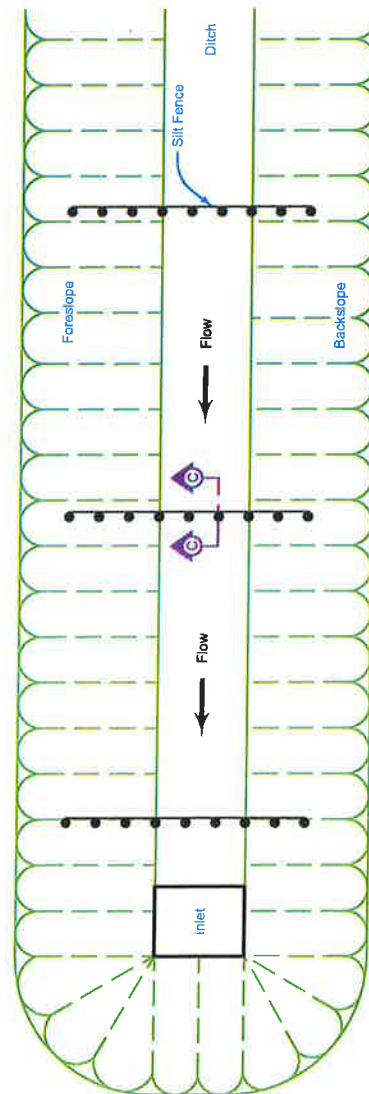
SHEET 2 of 3

REVISIONS: Clarified top of all fence is to be minimum of 18 inches above ground line. Added notes to identify the bottom of the trench (manual installation).

Brion Smith
APPROVED BY DESIGN METHOD ENGINEER



PLAN FOR SILT FENCE AT INTAKE

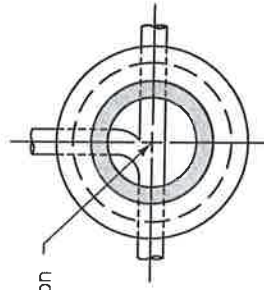


Contour Lines

PLAN FOR SILT FENCE DITCH CHECK AT INLET

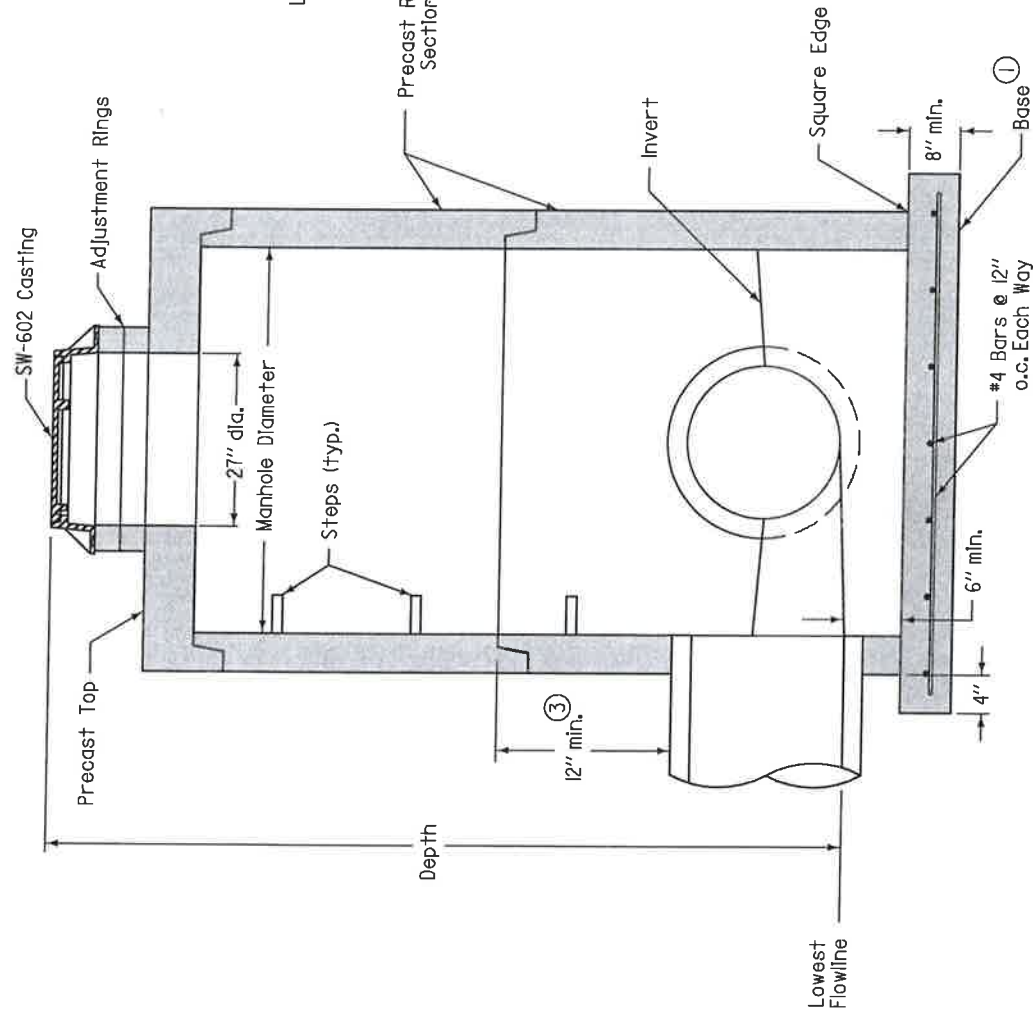
	REVISION	1	04-21-15
	EC-201		
	SHEET 3 of 3		
STANDARD ROAD PLAN			
REVISIONS: Clarified top of silt fence to be minimum of 15 inches above ground line. Added notes to identify the bottom of the trench (manual installation).			
<i>Dr. J. Smith</i>			
APPROVED BY DESIGN METHOD ENGINEER			
SILT FENCE			

- ① Cast-in-place base shown. If base is precast integral with bottom riser, the footprint of the base is not required to extend beyond the outer edge of the riser.
- ② For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
- ③ 12 inch minimum riser height above all pipe openings.



PLAN

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42



TYPICAL SECTION

		NEW 04-21-09 SW-401 SHEET 1 of 1
	FIGURE 6010.401 STANDARD ROAD PLAN REVISIONS: New, Replaces SUDAS Type "N-A" Manhole, Mill replace RA-50.	DESIGNER: <i>Deanna M. Smith</i> DESIGN METHOD: ENGINEER

**CIRCULAR STORM SEWER
MANHOLE**

CONSTRUCTION PLANS
(Separate Attachment)

STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

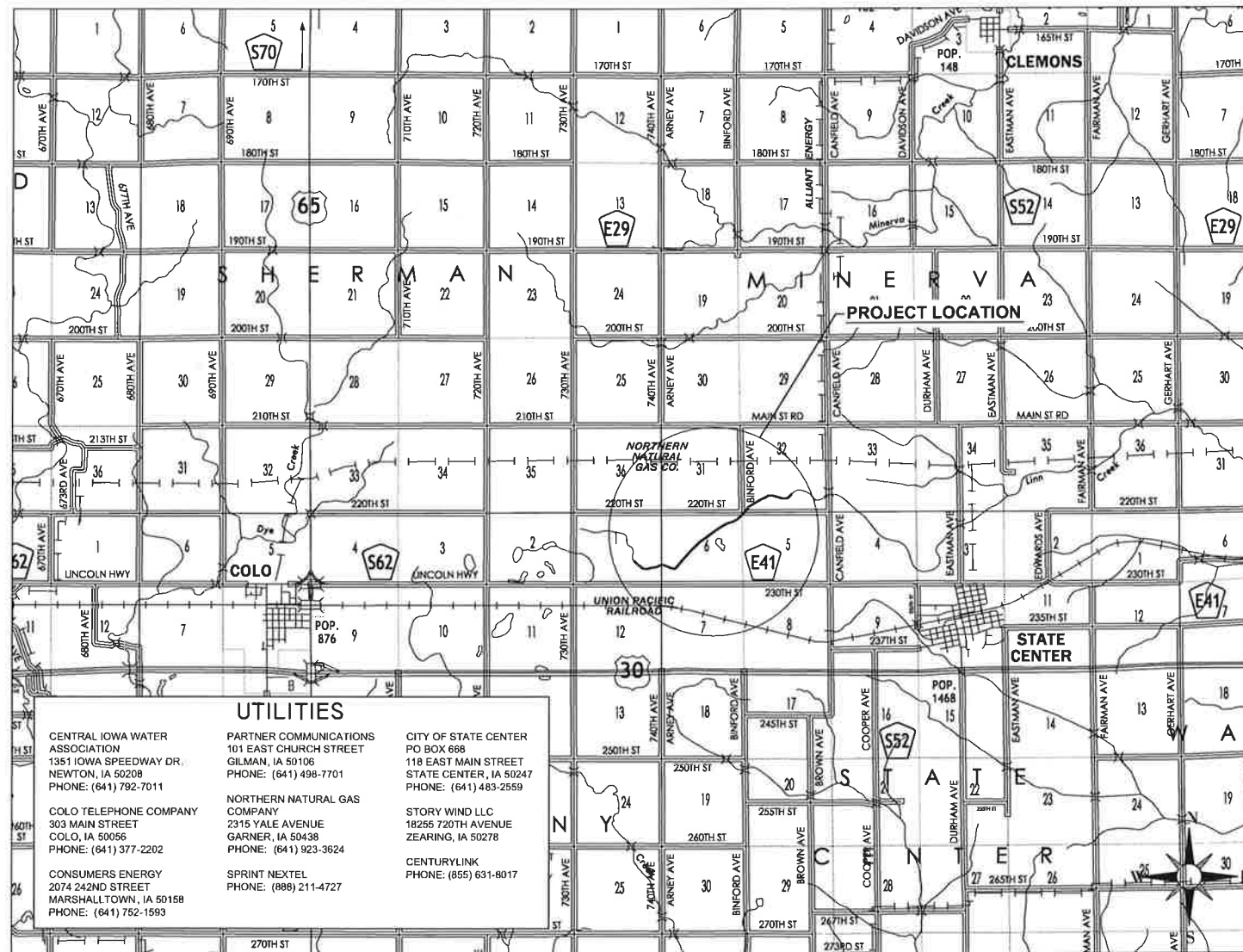


STORY AND MARSHALL CO., IOWA CONSTRUCTION PLANS FOR: ISG PROJECT # 13-16319 I+S GROUP

OPEN DITCH AND MAIN TILE IMPROVEMENTS

LEGEND

EXISTING	
	CITY LIMITS
	SECTION LINE
	QUARTER SECTION LINE
	RIGHT OF WAY LINE
	PROPERTY / LOTLINE
	EASEMENT LINE
	ACCESS CONTROL
	WATER EDGE
	WETLAND BOUNDARY
	WETLAND / MARSH
	FENCE LINE
	CULVERT
	STORM SEWER
	FIELD TILE
	SANITARY SEWER
	SANITARY SEWER FORCEMAIN
	WATER
	UNDERGROUND TELEPHONE
	OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC
	UNDERGROUND TV
	GAS
	UNDERGROUND FIBER OPTIC
	CONTOUR (MAJOR)
	CONTOUR (MINOR)
	DECIDUOUS TREE
	CONIFEROUS TREE
	TREE LINE
	MANHOLE
	CATCH BASIN
	HYDRANT
	VALVE
	CURB STOP
	POWER POLE
	UTILITY PEDESTAL / CABINET
PROPOSED	
	LOT LINE
	RIGHT OF WAY
	EASEMENT
	CULVERT
	FIELD TILE
	SANITARY SEWER
	SANITARY SEWER (PIPE WIDTH)
	WATER
	OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC
	UNDERGROUND TV
	GAS
	CONTOUR
	MANHOLE
	CATCH BASIN
	HYDRANT
	VALVE



PROJECT INDEX:

OWNER:
JOINT DRAINAGE DISTRICT NO. 1
STORY AND MARSHALL
COUNTIES,
IOWA

PROJECT ADDRESS / LOCATION:
STORY COUNTY
1, 2 / T83N / R21W
NEW ALBANY TWP

MARSHALL COUNTY
5, 6 / T83N / R20W
32 / T84N / R20W
STATE CENTER & MINERVA TWP

MANAGING OFFICE:

ALGONA OFFICE
1609 US HIGHWAY
18 EAST
PO BOX 715
ALGONA/IOWA/50511
PHONE: 515.295.2980
PROJECT MANAGER: KENT RODE
EMAIL: KENT.RODE@IS-GRP.COM



SPECIFICATIONS REFERENCE
ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT MANUAL ISSUED BY I+S GROUP, UNLESS DIRECTED OTHERWISE.

PROJECT DATUM
HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1986 ADJUSTMENT (NAD83(1986)) ON THE IOWA STATE PLANE (NORTH) COORDINATE SYSTEM, IN U.S. SURVEY FEET. ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=1067.45
PT# 13 - IRON BAR WITH BLUE CAP
73 FT NORTH 166 FEET EAST OF CENTERLINE
INTERSECTION OF BINFORD AVE AND 220TH STR

TOPOGRAPHIC SURVEY
THIS PROJECTS TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED ON 3-4-14, 8-22-14, & 11-21-14

SHEET INDEX

A.01	TITLE SHEET
A.02	LANDOWNERS PLAT
C.01	CONSTRUCTION NOTES
C.02	ESTIMATED PROJECT QUANTITIES
B.01	TILE INSTALLATION DETAILS
B.02	OPEN DITCH TYPICAL SECTION & BANK SHAPING
B.03	TILE EXTENSION & SURFACE DRAINS
B.04	ROCK CHUTE
B.05-B.08	ALUMINUM DROP STRUCTURE
D.01-D.09	PLAN AND PROFILE
X.01-X.04	CROSS SECTIONS
X.05-X.08	SURFACE DRAIN CROSS SECTIONS
X.09-X.10	ROCK CHUTE CROSS SECTIONS



PROJECT GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS AND CLARIFICATIONS ISSUED BY THE ENGINEER.
- CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
- WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
- THE LOCATION AND TYPE OF ALL INPLACE UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I+S GROUP (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS AND ELEVATIONS OF ALL INPLACE UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
- THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS, 48 HOURS PRIOR TO EXCAVATION / CONSTRUCTION (1-800-292-8989). A "IOWA ONE CALL" WAS NOT PERFORMED AT THE TIME OF THE TOPOGRAPHIC SURVEY.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Kent L. Rode 3-13-15
KENT L. RODE Date
Pages or sheets covered by this seal: ALL SHEETS LISTED IN THE INDEX OF DRAWINGS
My license renewal date is December 31, 2015.

NOTE: THE CLARITY OF THESE PLANS DEPENDS UPON COLOR COPIES. IF THIS TEXT DOES NOT APPEAR IN COLOR, THIS IS NOT AN ORIGINAL PLAN SET AND MAY RESULT IN MISINTERPRETATION.

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PROJECT
STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

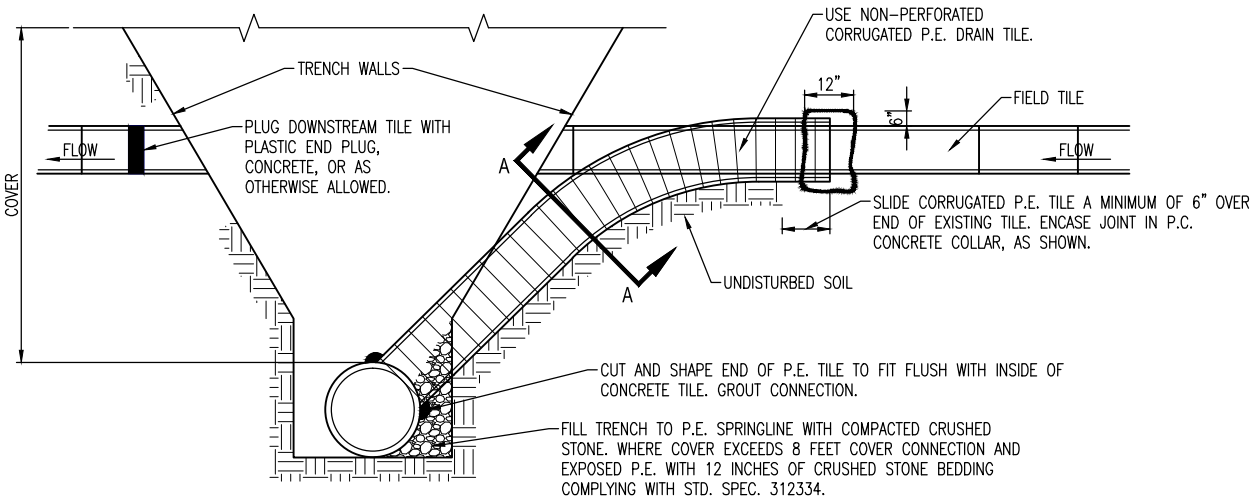
PROJECT NO.	13-16319
FILE NAME	A.01 TITLE SHEET
DRAWN BY	TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	

TITLE

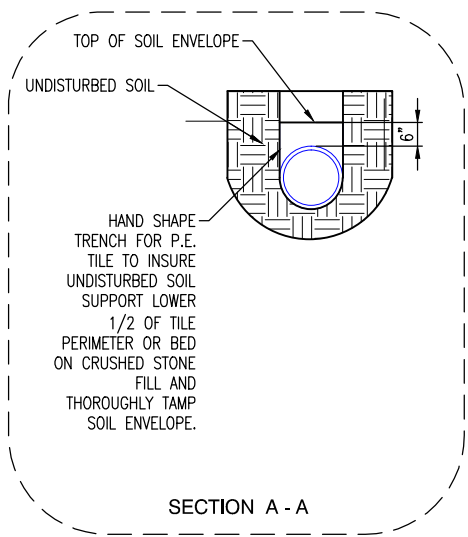
TITLE SHEET

SHEET
A.01

SAVED DATE: 3/18/2015 FILE PATH: F:\16000\16300-16399\16319 JOINT.DWG #1: STORY AND MARSHAL COUNTY\16319 CIVIL-SURVEY\16319 CIVIL PRODUCTION DRAWINGS\C.01 CONSTRUCTION NOTES.DWG



TYPICAL FIELD TILE CONNECTION
FOR FIELD TILE UP TO 10" DIAMETER
NO SCALE



PIPE HAUNCH AREAS FILL AND COMPACTION METHOD REQUIREMENTS COMPLIANCE VERIFICATION

THE CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR THE INSTALLATION OF ALL PIPE IN COMPLIANCE WITH PLAN REQUIREMENTS. CONTRACTOR'S PARTICIPATION IN AND COMPLIANCE WITH THE FOLLOWING PIPE INSTALLATION COMPLIANCE VERIFICATION STEPS IS REQUIRED AND WILL ALLOW FOR THE TAKING OF FEWER SOIL DENSITY TESTS AND WILL ENHANCE THE PROPER PIPE INSTALLATION PROCESS.

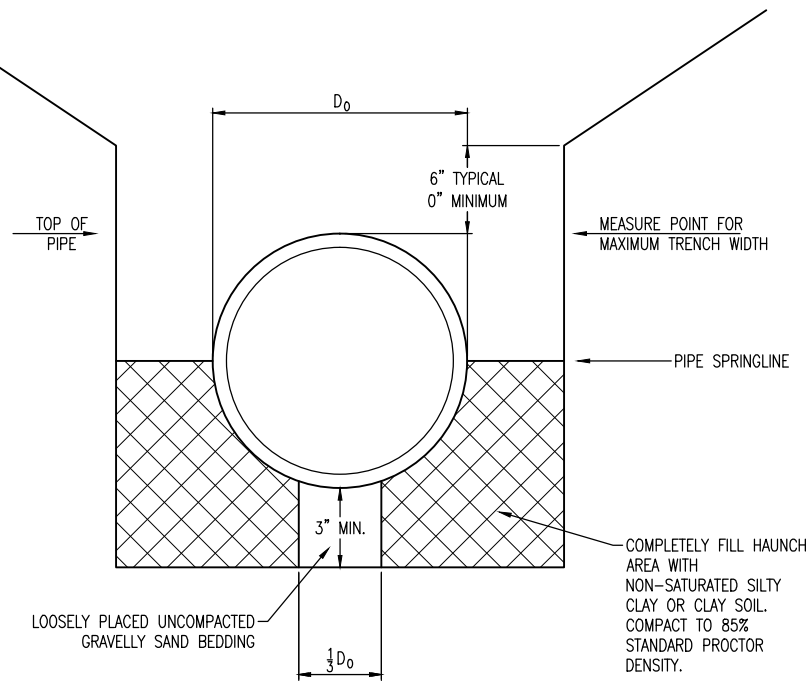
STEP 1
BEFORE PIPE INSTALLATION MAY COMMENCE IT IS REQUIRED THAT AN INDEPENDENT QUALIFIED SOILS TESTING LAB COMPLETE AND PROVIDE STANDARD SOIL PROCTOR DENSITY TEST RESULT(S) OF REPRESENTATIVE SAMPLE(S) OF THE SOIL WITH WHICH THE PIPE HAUNCH AREA WILL BE FILLED. THE SELECTION OF THE SAMPLE(S) WILL BE MADE WITH THE ENGINEER AND CONTRACTOR.

STEP 2
WITH ENGINEER AND TESTING LAB TECHNICIAN PRESENT CONTRACTOR MAY BEGIN PIPE INSTALLATION, EXCAVATING THE MODIFIED TYPE 4 TRENCH WITH THE REQUIRED SHAPED BOTTOM GROOVE AND PLACING SEVERAL PIPE SECTIONS.

CONTRACTOR WILL DEMONSTRATE THE METHOD BY WHICH HE INTENDS TO FILL AND COMPACT THE PIPE HAUNCH AREAS. SOIL DENSITY TESTS SHALL BE TAKEN AT LOCATIONS REQUIRED BY ENGINEER TO CONFIRM TO ENGINEER'S SATISFACTION THAT THE CONTRACTOR'S METHOD TO FILL AND COMPACT THE PIPE HAUNCH AREAS WILL SATISFY PLAN REQUIREMENTS. IF THESE TESTS PROVE UNSUCCESSFUL CONTRACTOR MUST ALTER THE INSTALLATION METHOD AND REPEAT STEP 2 UNTIL SUCCESSFUL.

CONTRACTOR IS REQUIRED TO PROPERLY AND ADEQUATELY INSTRUCT SUBCONTRACTORS AND/OR SUBSEQUENT PIPE INSTALLATION WORKERS ON THE PROPER INSTALLATION METHOD.

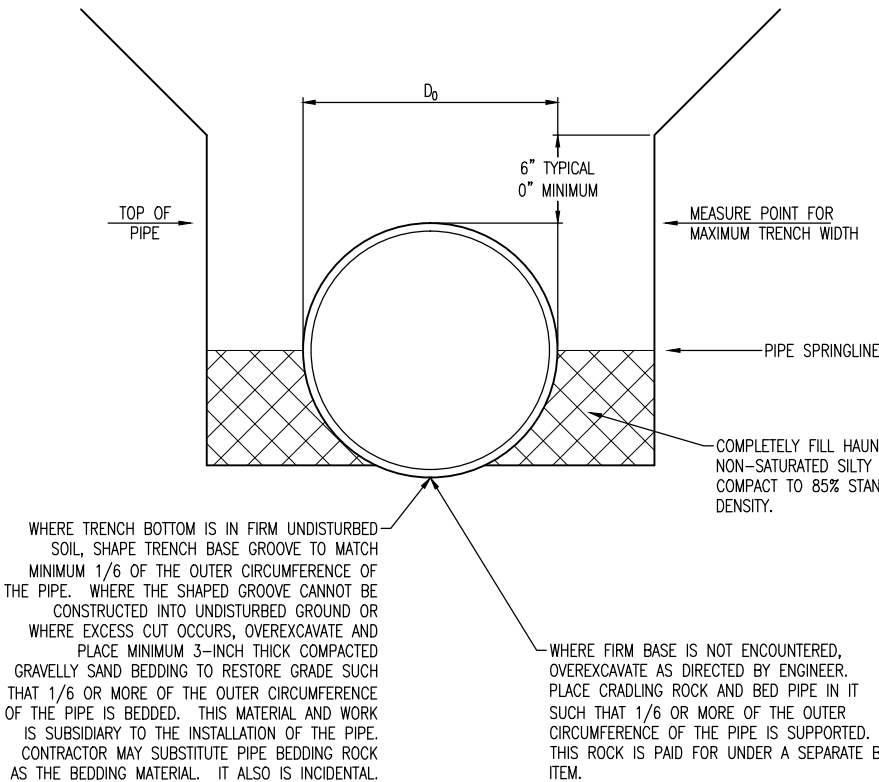
EXCEPTION
IF CONTRACTOR ELECTS TO SHAPE THE TRENCH BOTTOM SO THAT AT LEAST 45% OF THE OUTER CIRCUMFERENCE OF THE PIPE IS FIRMLY BEDDED IN AND CONSISTENTLY SUPPORTED BY UNDISTURBED SOIL, PIPE HAUNCH FILL COMPACTION WILL NOT BE REQUIRED. HOWEVER, FOR INSTALLATION SITUATIONS THAT WILL INEVITABLY OCCUR WHERE THE EXCEPTION CANNOT BE ACHIEVED, CONTRACTOR IS STILL REQUIRED TO VERIFY A PROPER INSTALLATION METHOD AND TO FULLY COMPLY WITH THE REQUIREMENTS OF THE IN-PLACE DENSITY VERIFICATION STEPS OUTLINED ABOVE.



GRAVELLY SAND BEDDING SHALL BE CONSISTENT WITH THE GRADATION AND OTHER CHARACTERISTICS OF STANDARD AASHTO A1 OR A3 SOIL. A REPRESENTATIVE SAMPLE OF THE MATERIAL AND A GRADATION REPORT OR SUPPLIER'S CERTIFICATION OF COMPLIANCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO DELIVERY TO SITE.

TRENCH INSTALLATION TYPE 3
SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION CONCRETE PIPE DESIGN MANUAL

NOTE: NO TRENCH INSTALLATION TYPE 3 IS SPECIFIED. IT IS SHOWN HERE FOR POTENTIAL REFERENCE FOR PLAN CHANGES.



MODIFIED TRENCH INSTALLATION TYPE 4

SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION CONCRETE PIPE DESIGN MANUAL

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PROJECT
STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

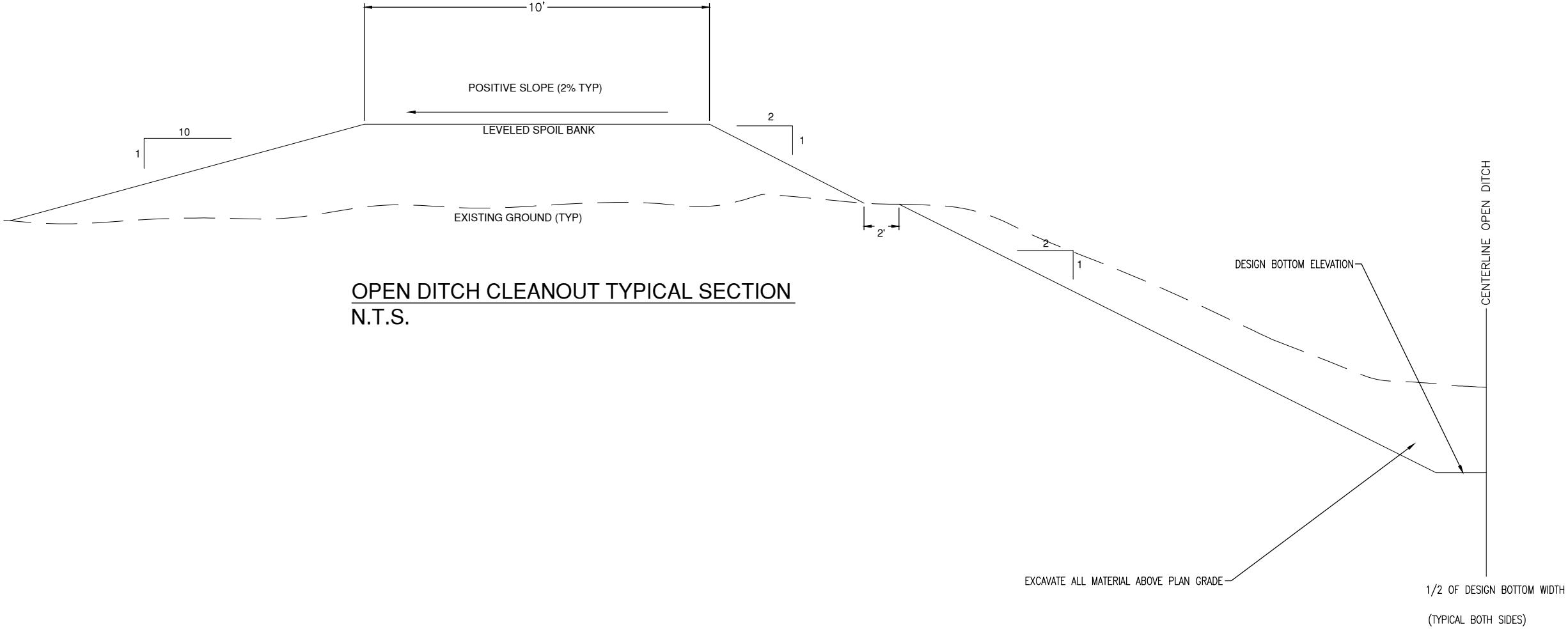
STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	C.01 CONSTRUCTION NOTES
DRAWN BY	JKF
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015

CLIENT PROJECT NO. -

TITLE
TILE INSTALLATION DETAILS



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PROJECT
**STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	C.02 DETAILS
DRAWN BY	TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

TITLE
**OPEN DITCH
TYPICAL SECTION
& BANK SHAPING**

SHEET
B.02

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PROJECT

STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

[illegible]

PROJECT NO. 13-16319

FILE NAME	C.02 DETAILS
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DRAWN BY	TAC
----------	-----

DESIGNED BY KLR

REVIEWED BY KLR/NRF

ISSUE DATE	3-18-2015
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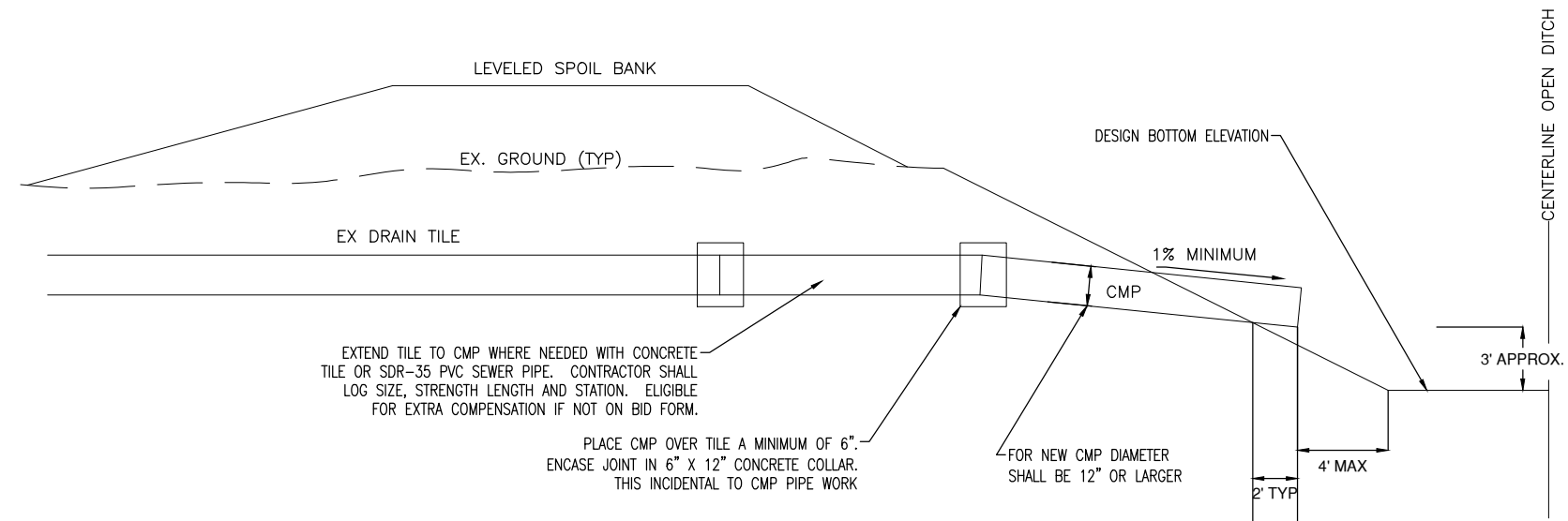
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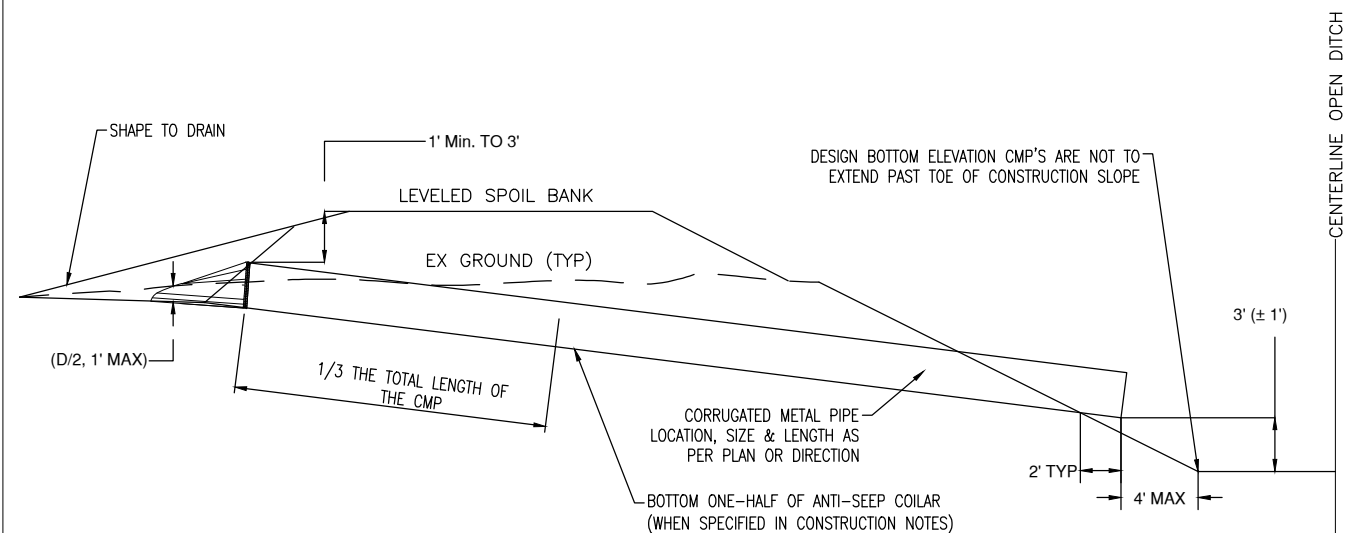
TILE EXTENSION & SURFACE DRAINS

SHEET

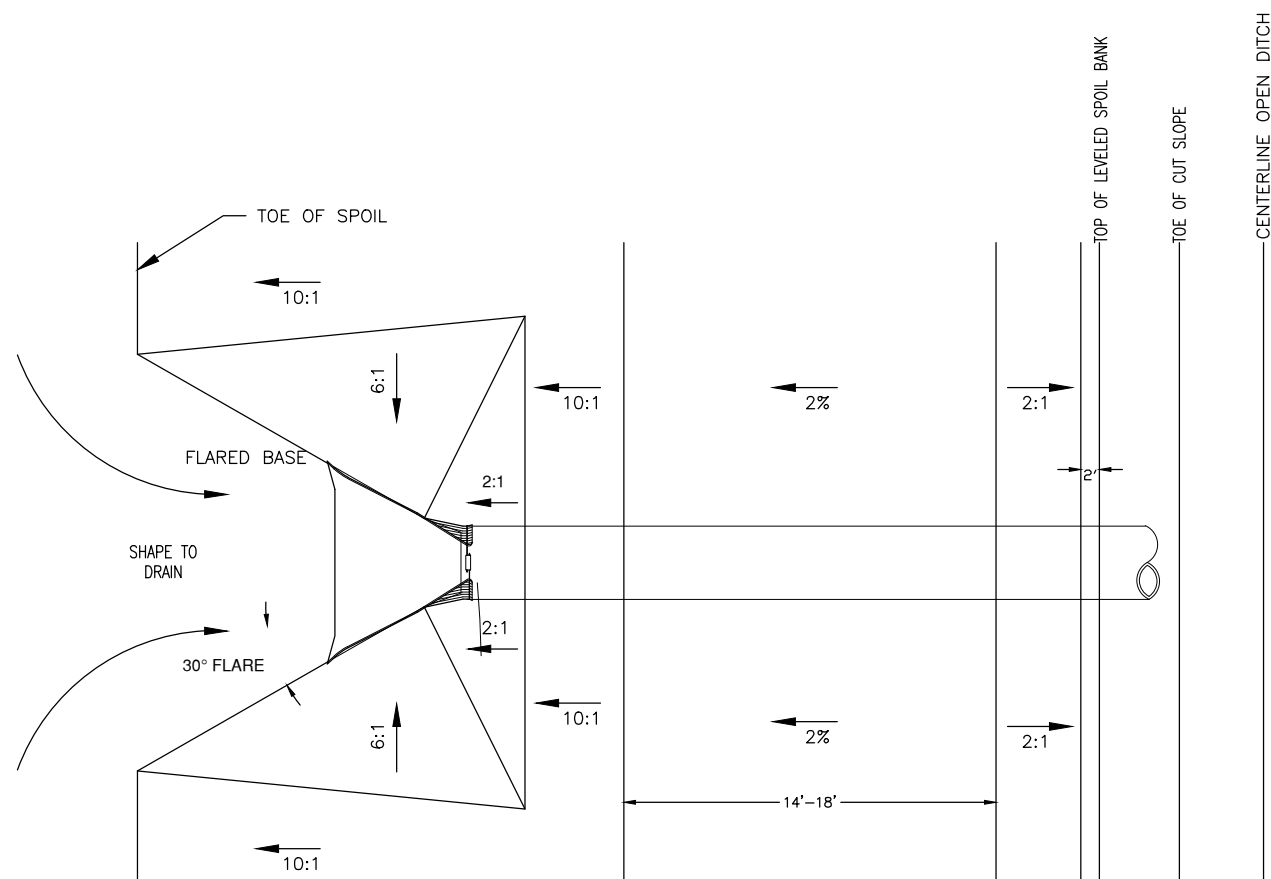
B.03



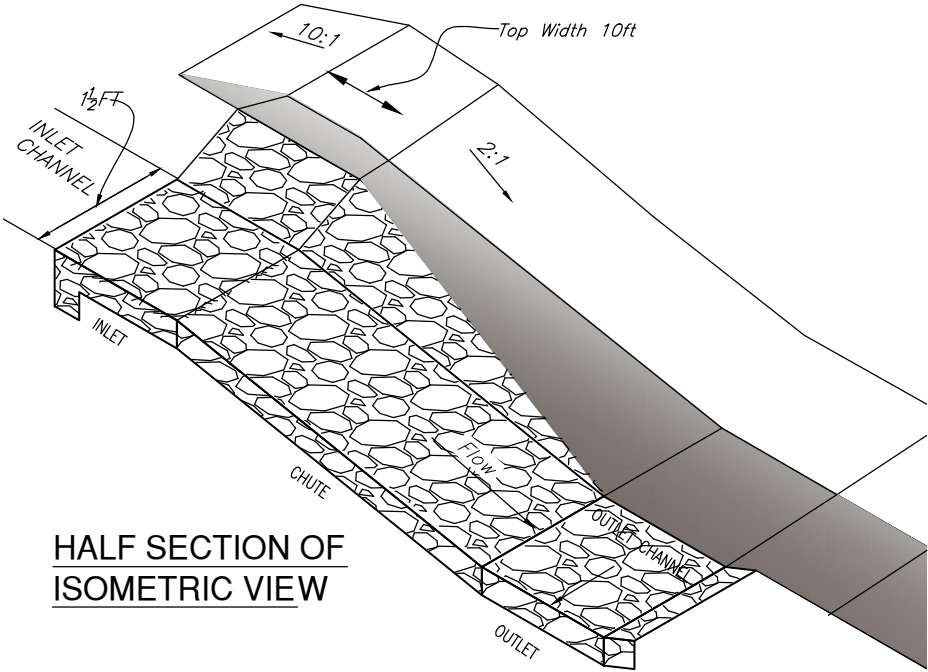
TILE EXTENSION
N.T.S



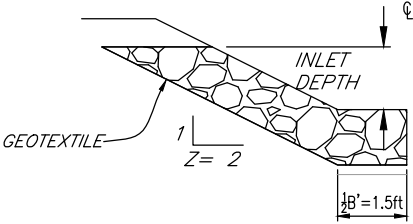
SURFACE DRAIN: PROFILE VIEW
N.T.S.



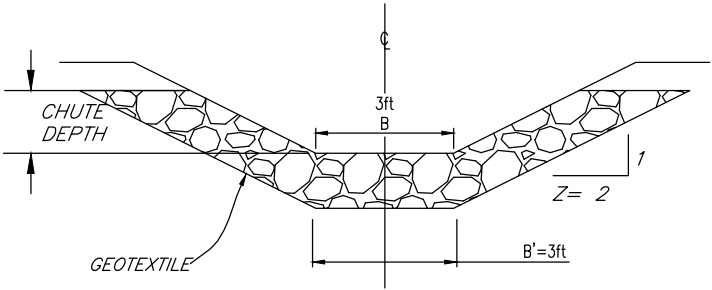
SURFACE DRAIN: PLAN VIEW
N.T.S.



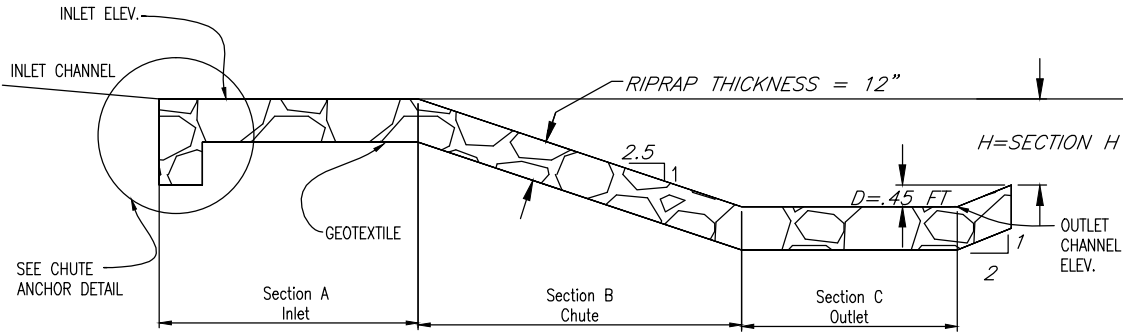
HALF SECTION OF
ISOMETRIC VIEW



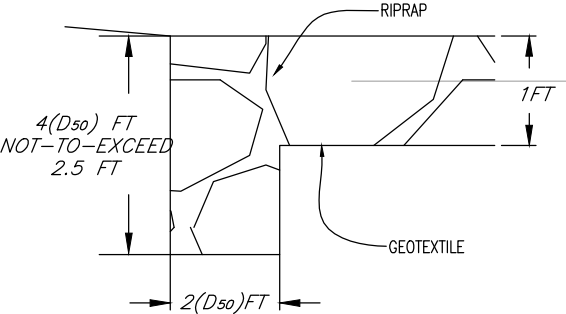
HALF SECTION OF INLET SECTION
(AT CENTERLINE OF DIKE)



CROSS SECTION OF CHUTE SECTION



PROFILE ALONG CENTERLINE



CHUTE ANCHOR DETAIL

- NOTES:
1. MINIMUM RIPRAP THICKNESS SHALL BE 12".
 2. RIPRAP THICKNESS IS MEASURED PERPENDICULAR TO THE SLOPE.
 3. GEOTEXTILE FABRIC SHALL BE INSTALLED UNDER ALL RIPRAP. GEOTEXTILE SHALL CONFORM TO SPECIFICATION SECTION 33 4624.
 4. WRAP GEOTEXTILE A MINIMUM OF 18" OVER ALL RIPRAP EDGES.
 5. THE LENGTH OF THE INLET SECTION SHALL BE A MINIMUM OF 10 FT. THE SLOPE SHALL BE CONTINUOUS FROM THE COMPLETION OF THE BERM TO THE LIP OF THE OPEN CHANNEL AND SHALL NOT EXCEED 4%.
 6. THE MAXIMUM CHUTE SLOPE IN THE DIRECTION OF FLOW SHALL BE 2.5:1. THE MAXIMUM SIDE SLOPES OF THE CHUTE SHALL BE 2:1.
 7. THE OUTLET SECTION SHALL CONFORM TO THE MAIN OPEN CHANNEL SLOPE.
 8. CHUTE ANCHOR DETAIL IS NOT NEEDED WHERE A BEDROCK FOUNDATION IS PRESENT.
 9. RIP-RAP SIZE (D50) FOR CHUTE ANCHOR BASED ON RIP-RAP SPECIFICS.

GRADATION OF CLASS "E" RIP-RAP	
STONE SIZE	% LARGER THAN
250 LBS	0
90 LBS	50 - 100
5 LBS	90 - 100
1/2" SIEVE	95 - 100

TABLE OF QUANTITIES STA. 04+24		
ITEM	QUANTITY	UNIT
RIP RAP	9.1	TN
GEOTEXTILE	32.1	SY

TABLE OF QUANTITIES STA. 08+47		
ITEM	QUANTITY	UNIT
RIP RAP	26.9	TN
GEOTEXTILE	61.0	SY

TABLE OF QUANTITIES STA. 08+59		
ITEM	QUANTITY	UNIT
RIP RAP	28.8	TN
GEOTEXTILE	64.7	SY

TABLE OF QUANTITIES STA. 15+35		
ITEM	QUANTITY	UNIT
RIP RAP	128.9	TN
GEOTEXTILE	147.0	SY

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	C.02 DETAILS
DRAWN BY	TAC
DESIGNED BY	KLR/TAC
REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

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PROJECT

STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 13-16319

FILE NAME C.04 ALUMINUM DROP STRUCTURE

DRAWN BY NRCS

DESIGNED BY KLR/TAC

REVIEWED BY KLR/NRF

ISSUE DATE 3-18-2015

CLIENT PROJECT NO. -

TITLE

Aluminum Drop Structure

SHEET

B.05

MATERIAL NOTES

- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS EQUAL TO 4000 PSI.
- ALL REINFORCING STEEL BARS SHALL BE GRADE 60 - #4 BARS.
- ALUMINUM SHEETS SHALL BE STRUCTURAL PLATE (2 1/2" X 9" CORRUGATIONS) AND SHALL BE ALLOY 5052 CONFORMING TO ASTM B 746 AND AASHTO M219. SHEETS USED FOR WEIR AND HEADWALLS SHALL BE 0.125" THICK; SHEETS USED FOR DEADMAN ANCHOR PLATES SHALL BE 0.150" THICK.
- ALUMINUM ANGLES SHALL BE ALLOY 6061-T6 CONFORMING TO ASTM B 308.
- ALUMINUM HEADWALL CAP, ANCHOR PLATE REINFORCING RIB, AND WALE BEAM SHALL CONFORM TO ASTM B 221. ALLOYS SHALL BE 6063-T6 FOR HEADWALL CAP, AND 6061-T6 FOR REINFORCING RIB AND WALE BEAM.
- BOLTS SHALL BE 3/4" DIAMETER HOT-DIPPED GALVANIZED STEEL CONFORMING TO ASTM A 307.
- SEAM SEALANT SHALL BE KNIFE-GRADE ASPHALT MASTIC OR POLYMER ADHESIVE SEALANT TAPE, MANUS-BOND 64-A, OR EQUAL.
- ANCHOR RODS SHALL BE 3/4" DIA. GALVANIZED STEEL WITH THREADED ENDS CONFORMING TO ASTM A 529, GRADE 55.
- AGGREGATE FOR GRANULAR BASE BENEATH CONCRETE APRON SLAB SHALL BE DENSE-GRADED, UNWASHED ROAD GRAVEL WITH <15% PASSING THE #200 SIEVE, IDOT GRADATION #11, OR EQUAL (OR INSERT YOUR STATE EQUIV. HERE).
- DRAINFILL AGGREGATE SHALL MEET THE STANDARD GRADATION OF ASTM C 33 SIZE 57 OR 67.
- SCREEN MATERIAL PLACED BETWEEN THE WEEP HOLES AND THE DRAINFILL AGGREGATE SHALL BE EXPANDED ALUMINUM COIL, MIN. 0.027" THICK (SPECTRA ALUMINUM DROP-IN GUTTER SCREEN, OR EQUAL), OR UV-STABILIZED SYNTHETIC GEOMESH (MIRAFI MIRAMESHGR MONOFILAMENT POLYPROPYLENE, OR EQUAL). OPENING SIZE SHALL BE MAX. 0.25" AND MIN. 0.08".
- GRANULAR BACKFILL MATERIAL ON UPSTREAM SIDE OF THE STRUCTURE UP TO 1 FT BELOW THE WEIR ELEVATION (OR TO BOTTOM ELEVATION OF RIPRAP) SHALL BE CLEAN, WELL-GRADED GRANULAR MATERIAL, MAX. SIZE 1-1/2", MAX. 5% FINES.
- BACKFILL MATERIAL ON DOWNSTREAM SIDE OF THE STRUCTURE AND UPPER 1 FT. ON UPSTREAM SIDE SHALL BE COMPACTED MOIST SOIL.
- RIPRAP SHALL CONSIST OF WELL-GRADED ROCK WITH MAXIMUM STONE SIZE = 250 LB, 30 LB ≥ D50 ≥ 100 LB, AND AT LEAST 90% OF STONES ≥ 3 LB, RIPRAP SHALL BE UNDERLAIN WITH NONWOVEN GEOTEXTILE BEDDING.
- WEIR LENGTH L VARIES FROM 14.2' TO 33.4' IN 1.6' INCREMENTS. CHECK WITH MANUFACTURER OR REFER TO NRCS HYDRAULIC DESIGN SPREADSHEET, "SEMICIRCULAR_DROP_STRUCTURE.XLSX" FOR A TABLE OF AVAILABLE WEIR LENGTHS, INCLUDING STRAIGHT PORTION OF WEIR DIMENSION B.
- SELECT HEADWALL LENGTH S BASED ON SITE SOILS AND AMOUNT OF EMBEDMENT INTO ABUTMENTS DEEMED NECESSARY.

STANDARD STRUCTURE SIZES

<i>D</i>	5'-0"	5'-0"		6'-0"		6'-0"	
<i>H</i>	2'-3"	3'-0½"		2'-0½"		2'-10"	
<i>A</i>	7'-9"	8'-6½"		8'-6½"		9'-4"	
<i>S</i>	18'-3"	18'-3"	20'-4"	18'-3"	20'-4"	20'-4"	22'-9"
<i>N</i>	6	6		6		8	
<i>T</i>	12'-6"	12'-6"		19'-0"		19'-0"	
<i>W</i>	8', 10', 12', 14' or 16'			10', 12', 14', or 16'			

STRUCTURE DIMENSIONS

OVERFALL HEIGHT (D)	6' - 0"	
NOTCH DEPTH (H)	2' - 10"	
HEADWALL HEIGHT (A)	9' - 4"	
HEADWALL LENGTH (S)	20' - 4"	
NO. OF ANCHORS (N)	8	EA
ANCHOR ROD LENGTH (T)	19' - 0"	
NOTCH WIDTH (W)	10	FT
WEIR LENGTH (L)*	17.4	FT
STRAIGHT PORTION OF WEIR (B)*	0.85	FT
U/S RIPRAP WIDTH (RW)	10	FT
D/S RIPRAP LENGTH (RL)	12	FT
D/S RIPRAP HEIGHT (RH)	3	FT
U/S CHANNEL BOTTOM WIDTH (WU)	34	FT
TAILWATER DEPTH (TW) AT DESIGN FLOW	0.7	FT

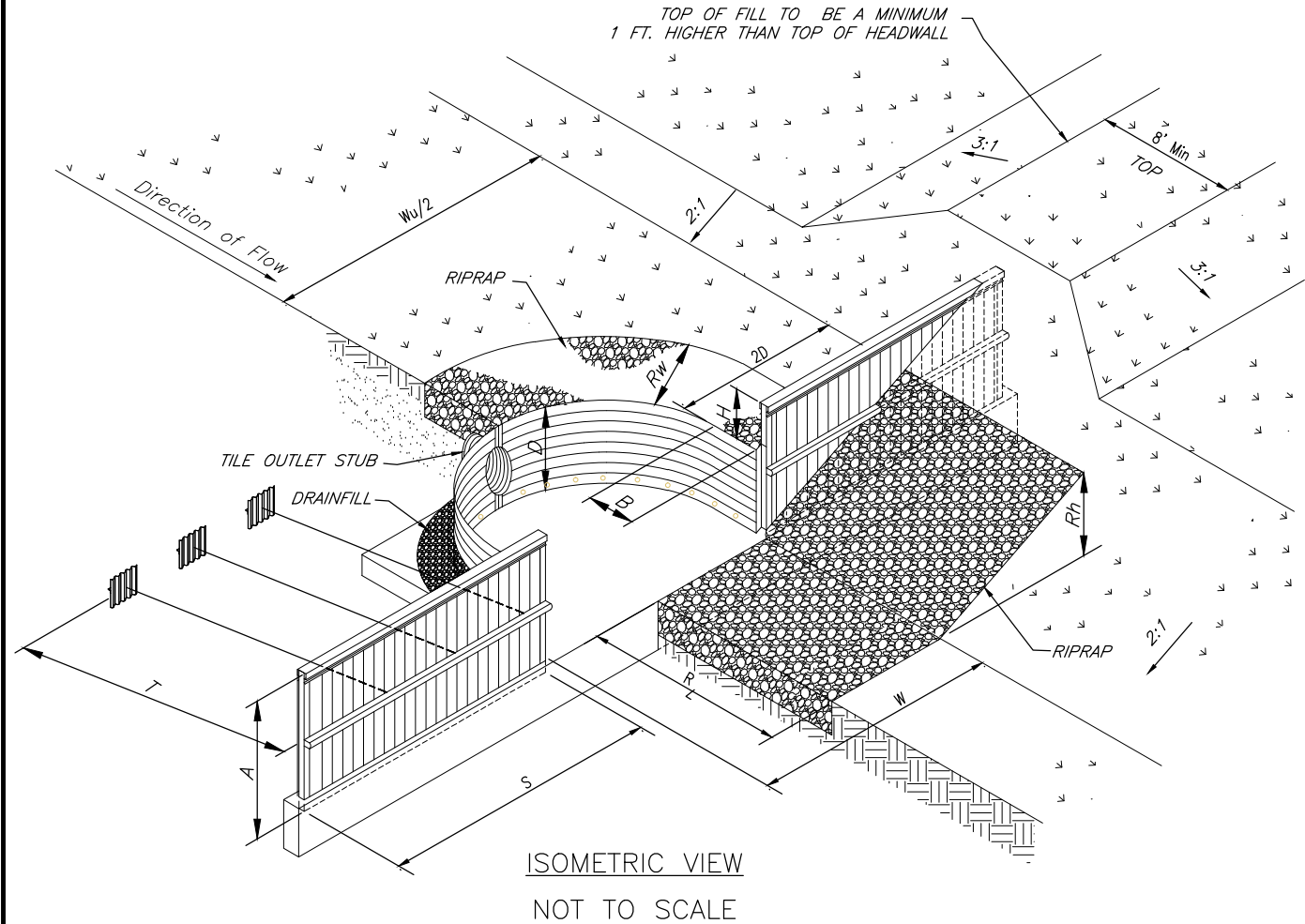
* SEE NOTE 15 ABOVE. 0.5' ≤ B ≤ 4.0'

STRUCTURE ELEVATIONS (ft)

CONCRETE APRON ELEVATION	1054.75
WEIR CREST ELEVATION	1060.75
TOP OF HEADWALL ELEVATION	1063.58
AUXILIARY SPILLWAY ELEVATION	N.A.
TOP OF EMBANKMENT ELEVATION	1065.00

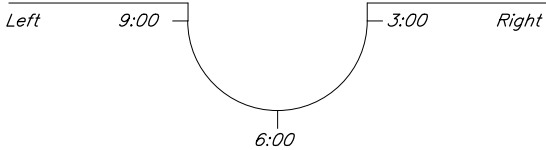
MINIMUM RIPRAP DIMENSIONS

UPSTREAM RIPRAP WIDTH (RW) = 2H
DOWNSTREAM RIPRAP LENGTH (RL) = 2D
DOWNSTREAM RIPRAP HEIGHT (RH) = TW,
BUT NEED NOT EXCEED D



BILL OF MATERIALS

ITEM	QUANTITY	UNIT
ALUMINUM DROP STRUCTURE	1	EA
CONCRETE (4000 PSI)	9.15	CY
REINFORCING STEEL, GRADE 60 (#4 BARS)	450	LB
GRANULAR BASE	1.70	CY
DRAINFILL	1.90	CY
ROCK RIP RAP	33.0	CY
EXCAVATION, STRUCTURE	7.0	CY
GRANULAR BACKFILL	7.15	CY
EARTHFILL	26.7	CY
C.M. PIPE, ALUMINUM, TILE STUB EXTENSIONS, 16 GAUGE, INCLUDING COUPLING BANDS & ANIMAL GUARDS:		
46" DIA.	4	LF
DRAINFILL SCREEN	14.2	LF
GEOTEXTILE, NONWOVEN	85.0	SY

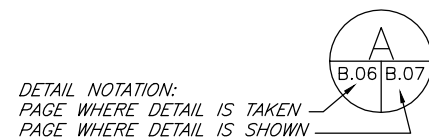
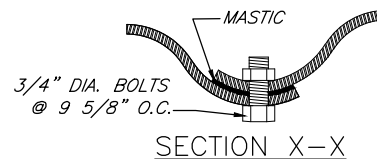
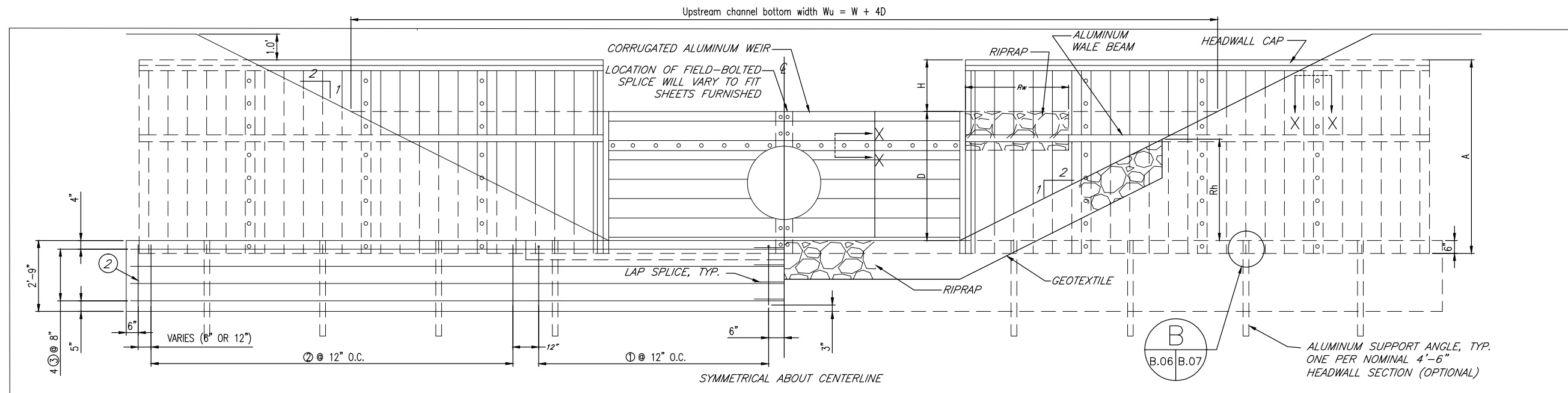


TILE OUTLET DESCRIPTION

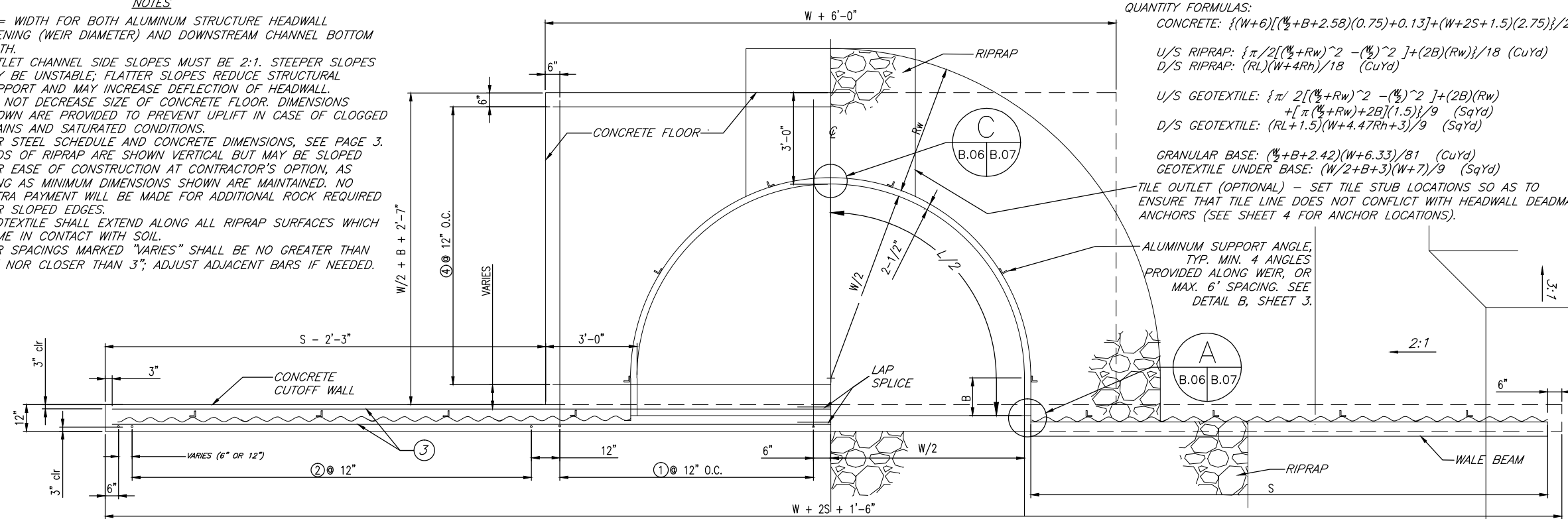
TILE OUTLET STUBS (AS REQUIRED) SHALL BE 2 FT. LENGTHS OF CORRUGATED ALUMINUM PIPE SHOP-WELDED TO THE STRUCTURE AS SPECIFIED BELOW:

- 8.7 FT. FROM LEFT HEADWALL AT THE 6:00 O'CLOCK POSITION (3:00-9:00) 46 INCH DIAMETER 5.0 FT. BELOW THE WEIR AT FLOWLINE OF C.M. PIPE

STANDARD DWG. IA-1415



- NOTES
1. W = WIDTH FOR BOTH ALUMINUM STRUCTURE HEADWALL OPENING (WEIR DIAMETER) AND DOWNSTREAM CHANNEL BOTTOM WIDTH.
 2. OUTLET CHANNEL SIDE SLOPES MUST BE 2:1. STEEPER SLOPES MAY BE UNSTABLE; FLATTER SLOPES REDUCE STRUCTURAL SUPPORT AND MAY INCREASE DEFLECTION OF HEADWALL.
 3. DO NOT DECREASE SIZE OF CONCRETE FLOOR. DIMENSIONS SHOWN ARE PROVIDED TO PREVENT UPLIFT IN CASE OF CLOGGED DRAINS AND SATURATED CONDITIONS.
 4. FOR STEEL SCHEDULE AND CONCRETE DIMENSIONS, SEE PAGE 3.
 5. ENDS OF RIPRAP ARE SHOWN VERTICAL BUT MAY BE SLOPED FOR EASE OF CONSTRUCTION AT CONTRACTOR'S OPTION, AS LONG AS MINIMUM DIMENSIONS SHOWN ARE MAINTAINED. NO EXTRA PAYMENT WILL BE MADE FOR ADDITIONAL ROCK REQUIRED FOR SLOPED EDGES.
 6. GEOTEXTILE SHALL EXTEND ALONG ALL RIPRAP SURFACES WHICH COME IN CONTACT WITH SOIL.
 7. BAR SPACINGS MARKED "VARIES" SHALL BE NO GREATER THAN 12" NOR CLOSER THAN 3"; ADJUST ADJACENT BARS IF NEEDED.



QUANTITY FORMULAS:

CONCRETE: $\{ (W+6) [(\frac{W}{2} + B + 2.58) (0.75) + 0.13] + (W + 2S + 1.5) (2.75) \} / 27$ (CuYd)

U/S RIPRAP: $\{ \pi / 2 [(\frac{W}{2} + R_w)^2 - (\frac{W}{2})^2] + (2B)(R_w) \} / 18$ (CuYd)

D/S RIPRAP: $(RL)(W + 4Rh) / 18$ (CuYd)

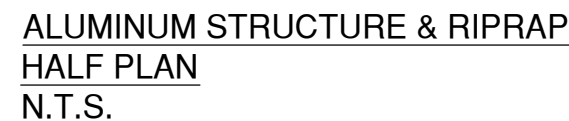
U/S GEOTEXTILE: $\{ \pi / 2 [(\frac{W}{2} + R_w)^2 - (\frac{W}{2})^2] + (2B)(R_w) + [\pi (\frac{W}{2} + R_w) + 2B] (1.5) \} / 9$ (SqYd)

D/S GEOTEXTILE: $(RL + 1.5)(W + 4.47Rh + 3) / 9$ (SqYd)

GRANULAR BASE: $(\frac{W}{2} + B + 2.42)(W + 6.33) / 81$ (CuYd)

GEOTEXTILE UNDER BASE: $(W / 2 + B + 3)(W + 7) / 9$ (SqYd)

TILE OUTLET (OPTIONAL) - SET TILE STUB LOCATIONS SO AS TO ENSURE THAT TILE LINE DOES NOT CONFLICT WITH HEADWALL DEADMAN ANCHORS (SEE SHEET 4 FOR ANCHOR LOCATIONS).



STANDARD DWG. 1A-1415

CONCRETE & REINFORCING
STEEL HALF PLAN
N.T.S.

SYMMETRICAL ABOUT CENTERLINE

ISG

Architecture
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Environmental
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www.is-grp.com

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PROJECT

**STORY AND
MARSHALL
COUNTIES
JOINT DRAINAGE
DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

[illegible]

PROJECT NO.	13-16319
FILE NAME	C.04 ALUMINUM DROP STRUCTURE
DRAWN BY	NRCS
DESIGNED BY	KLR/TAC
REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

TITLE	
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Aluminum Drop Structure

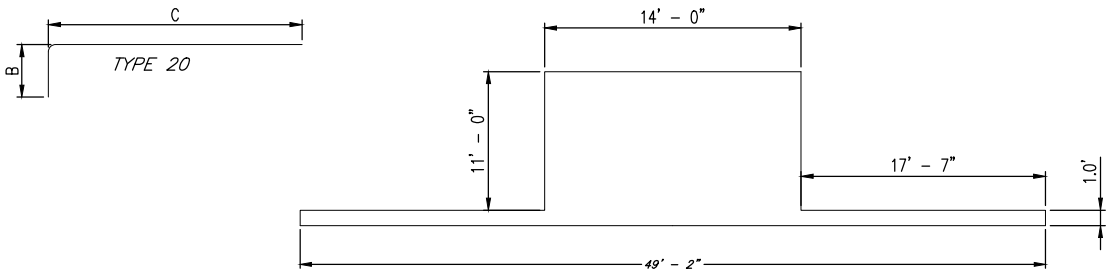
SHEET

B.06

STEEL SCHEDULE (All #4 bars)								
MARK	TYPE	B	C	QUANTITY	LENGTH	TOTAL LENGTH	QUANTITY FORMULAS	LENGTH FORMULAS
1	20	2'-4"	7.88	16	10'-2.6"	142'-11.8"	$W + 6$	$C \text{ Leg} = \frac{W}{2} + B + 3.08'$
2	Str.	-	-	38	2'-4"	88'-7.8"	$2[\text{Roundup}(S - 2.25)]$	Given
3	Str.	-	-	10	25'-8"	256'-7.6"	Given	$\frac{W}{2} + S + 1.33'$
4	Str.	-	-	8	13'-6"	108'-0"	$\text{RoundUp}(B + \frac{W}{2} + 2.33)$	$W + 5.5'$
TOTAL LENGTH						596'-3.2"	LIN. FT.	
WEIGHT = TOTAL LENGTH X 0.668 LB/LIN.FT.						450	LBS.	

REINFORCING STEEL NOTES

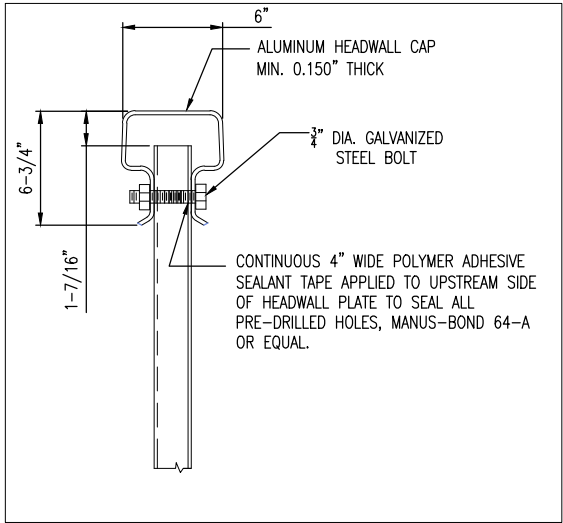
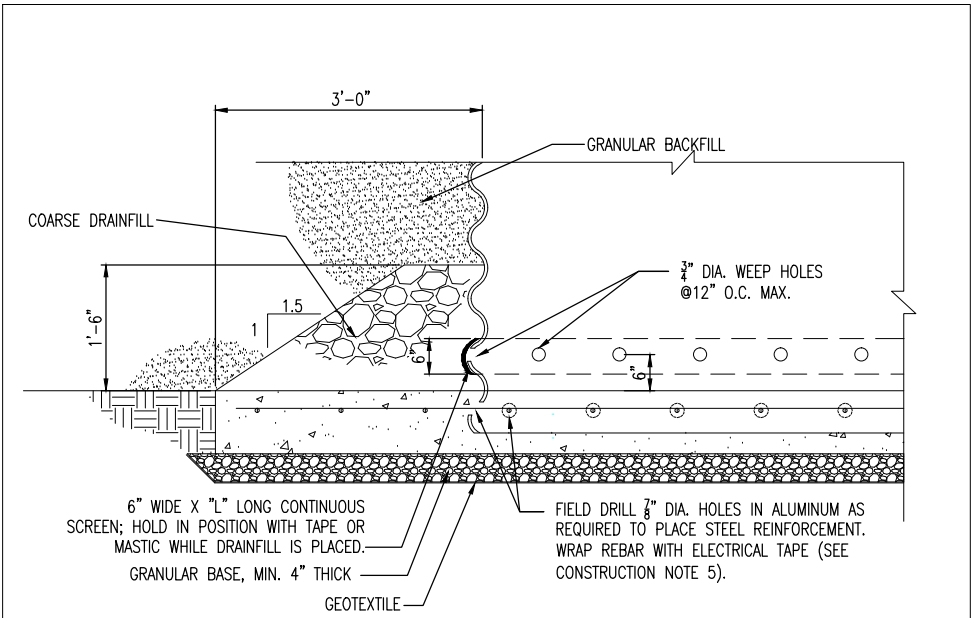
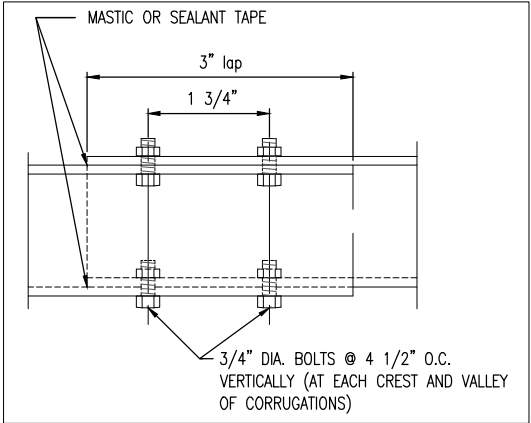
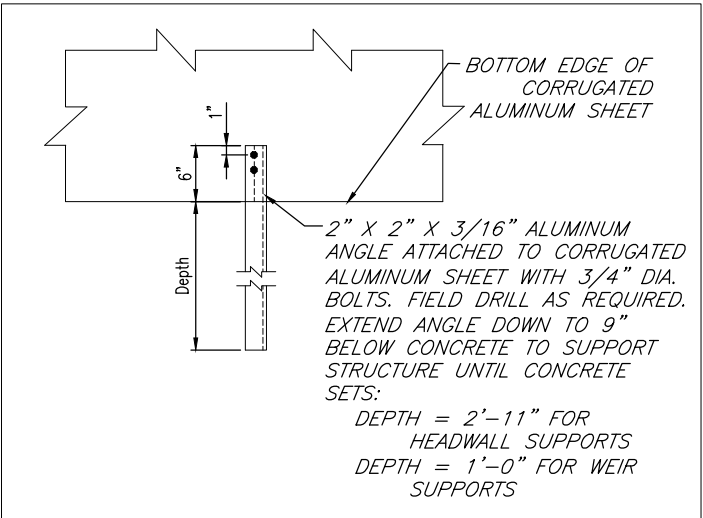
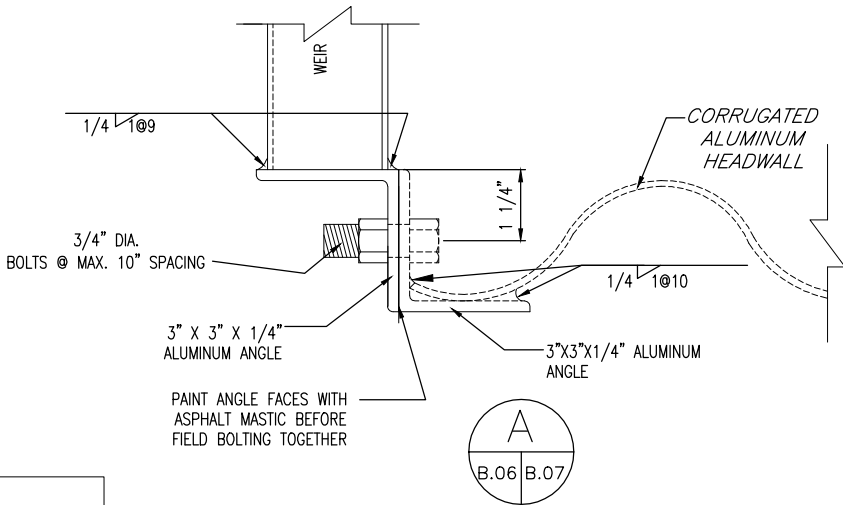
MIN. BAR SPLICE LENGTH FOR MARK ③ BARS = 1'-8"
MIN. BAR SPLICE LENGTH FOR MARK ④ BARS = 1'-4"
BEND RADIUS FOR TYPE 20 BAR = 2".



CONCRETE DIMENSIONS SUMMARY

CONSTRUCTION NOTES

- EXCAVATE STRUCTURE FOUNDATION. FORMS ARE NOT REQUIRED FOR CONCRETE APRON OR CUTOFF WALL IF EXCAVATED SOIL WILL STAND VERTICALLY. SIDE SLOPES ABOVE THE TOP OF THE CONCRETE SHALL BE 1.5:1 OR FLATTER. SOIL SUBGRADE BELOW GRANULAR BASE FOR APRON SLAB SHALL BE SMOOTH, LEVEL AND UNIFORMLY COMPACTED.
- WHEN NECESSARY, DEWATER THE SITE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 11, REMOVAL OF WATER. A SUMP PUMP, AND/OR OVEREXCAVATION AND BACKFILL WITH APPROPRIATE MATERIAL MAY BE NEEDED.
- PLACE GRANULAR BASE FOR APRON SLAB. MATERIAL SHALL BE UNIFORMLY FIRM, MOIST, LEVEL, WELL-COMPACTED AND FREE OF RUTS OR STANDING WATER PRIOR TO PLACEMENT OF CONCRETE.
- SET ALUMINUM STRUCTURE TO GRADE. CHECK ELEVATIONS OF WEIR, TOP OF FLOOR, AND BOTTOM OF CUTOFF TRENCH. APPLY KNIFE GRADE ASPHALT SEALER OR MASTIC TAPE BETWEEN ALUMINUM SHEETS BEFORE BOLTING STRUCTURE TOGETHER.
- DRILL HOLES IN STRUCTURE AND PLACE REINFORCING BARS. MAKE SURE THE REINFORCING STEEL HAS THE REQUIRED MINIMUM COVER. WRAP REINFORCING BARS WITH THREE LAYERS OF ELECTRICAL TAPE, OR EQUAL, WHERE THEY PASS THROUGH THE ALUMINUM SHEETS, OR COME IN CONTACT WITH ANY ALUMINUM SURFACE, INCLUDING SUPPORT ANGLES.
- PLACE THE CONCRETE FLOOR AND CUTOFF WALL IN ONE CONTINUOUS POUR.
- AFTER A MINIMUM OF 24 HOURS, ATTACH SCREEN OVER WEEPHOLES AND PLACE DRAINFILL. ATTACH C.M. PIPE TO TILE OUTLET STUBS, AND INSTALL ANIMAL GUARDS. LAY ADDITIONAL DRAIN TILE/TUBING IF NEEDED TO CONNECT WITH EXISTING SURFACE DRAINS.
- BACKFILL EVENLY AROUND STRUCTURE WITH CLEAN GRANULAR FILL ON UPSTREAM SIDE, AND COMPACTED EARTHFILL ON DOWNSTREAM SIDE OF STRUCTURE. INSTALL HEADWALL ANCHORS DURING BACKFILL OPERATIONS. PLACE BACKFILL IN 4"-6" LIFTS. COMPACT GRANULAR FILL WITH 3 PASSES OF A VIBRATORY PLATE. REMOVE DRY SOIL FROM SIDES OF EXCAVATIONS AS BACKFILL IS PLACED SO THAT MOIST SOIL IS TAMPED AGAINST MOIST SOIL. KEEP BACKFILL APPROXIMATELY LEVEL AROUND ALL PARTS OF THE STRUCTURE, EXCEPT THAT GRANULAR FILL LAYERS BELOW THE ANCHOR RODS MAY BE BROUGHT UP IN LAYERS THAT ARE PARALLEL TO THE ANGLE OF THE RODS TO FACILITATE COMPACTION (SEE SECTION THROUGH HEADWALL & ANCHOR RODS, PAGE 4). FINISH UPPER 1 FT OF UPSTREAM BACKFILL WITH COMPACTED EARTHFILL.
- AS GRANULAR BACKFILL IS PLACED AROUND HEADWALL ANCHOR PLATES AND RODS, TENSION THE ANCHORS PERIODICALLY AS REQUIRED TO REMOVE SLACK IN THE RODS, BY: A) TIGHTENING THE NUT WHERE THE ROD ATTACHES TO THE DEADMAN PLATE; OR B) CAREFULLY PRESSING EACH DEADMAN PLATE INTO THE FILL IN A DOWNWARD/UPSTREAM DIRECTION, TAKING CARE NOT TO BEND OR DAMAGE THE PLATE, NOR PULL THE HEADWALL OUT OF ALIGNMENT. SEE SECTION B-B ON P. 4.
- PLACE RIPRAP WITH GEOTEXTILE BEDDING AND COMPLETE GRADING AND SHAPING.
- SEED, FERTILIZE AND MULCH ALL DISTURBED AREAS AS SPECIFIED.



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PROJECT
STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	C.04 ALUMINUM DROP STRUCTURE
DRAWN BY	NRCS
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REVIEWED BY	KLR/NRF
ISSUE DATE	3-18-2015

CLIENT PROJECT NO. -

TITLE

Aluminum Drop Structure

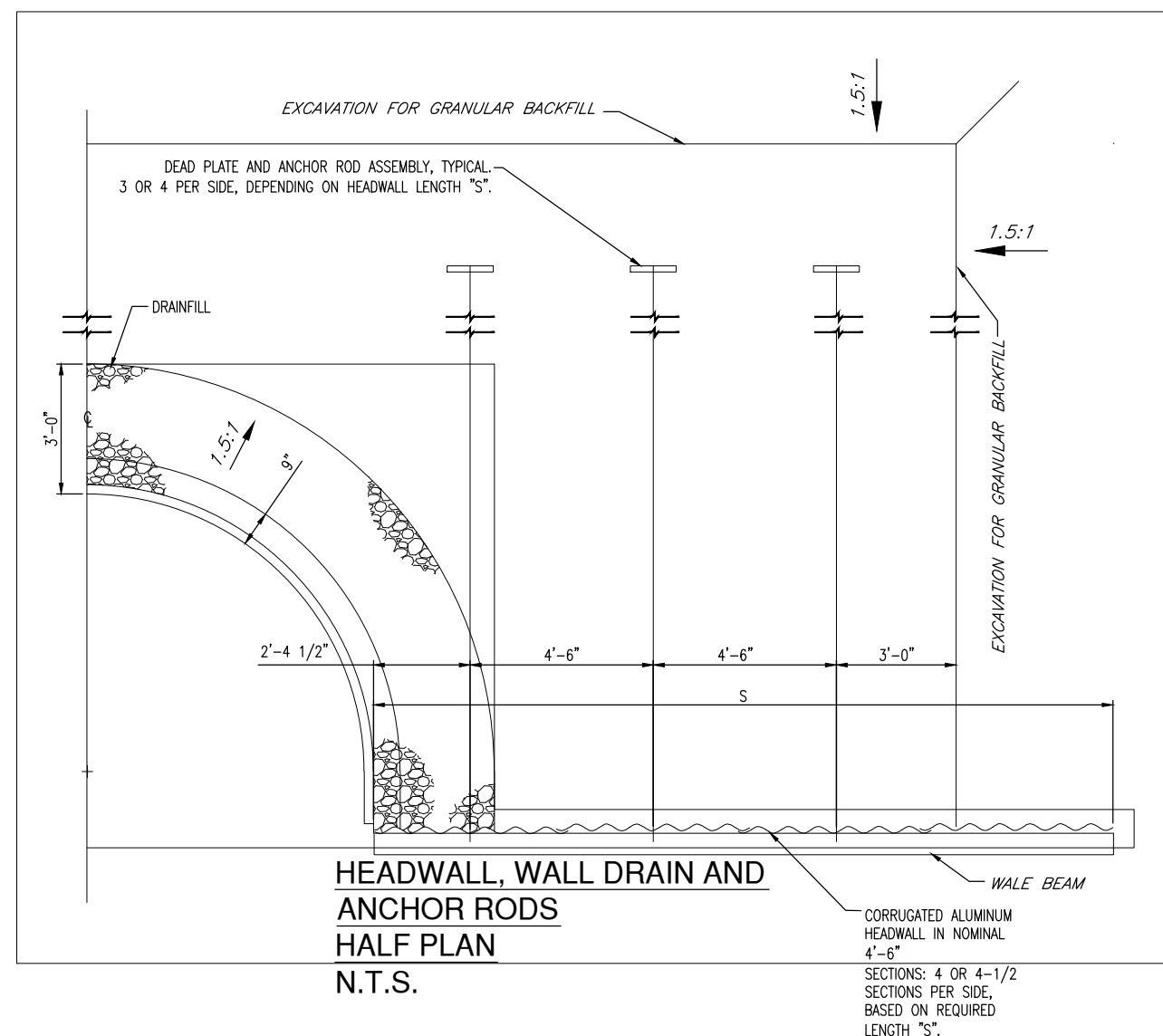
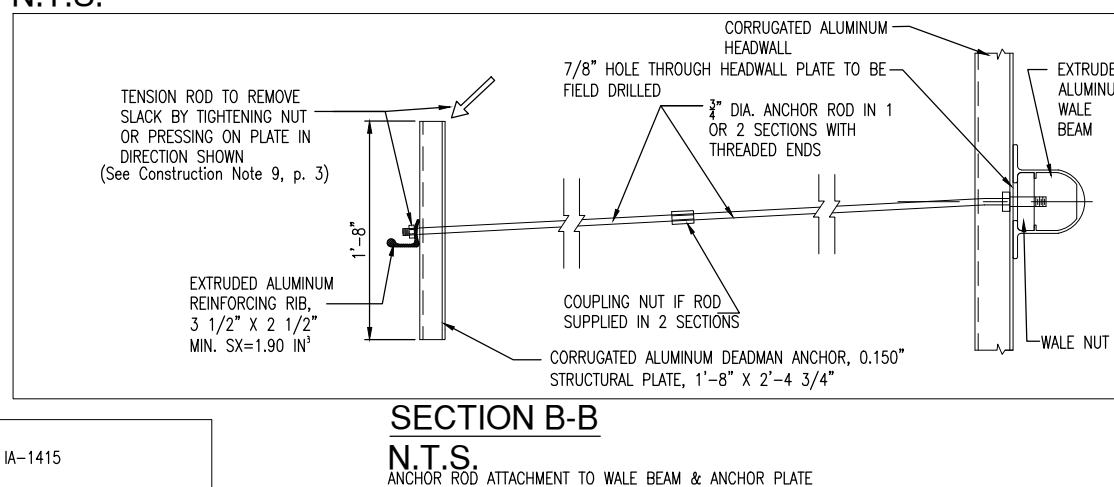
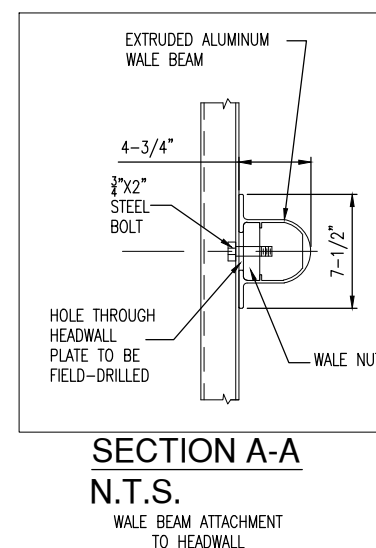
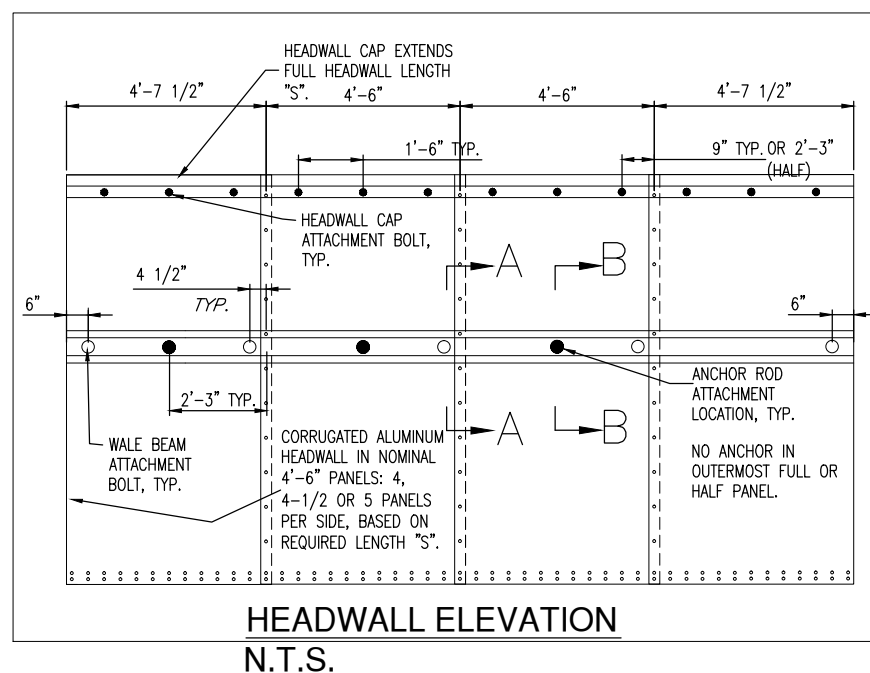
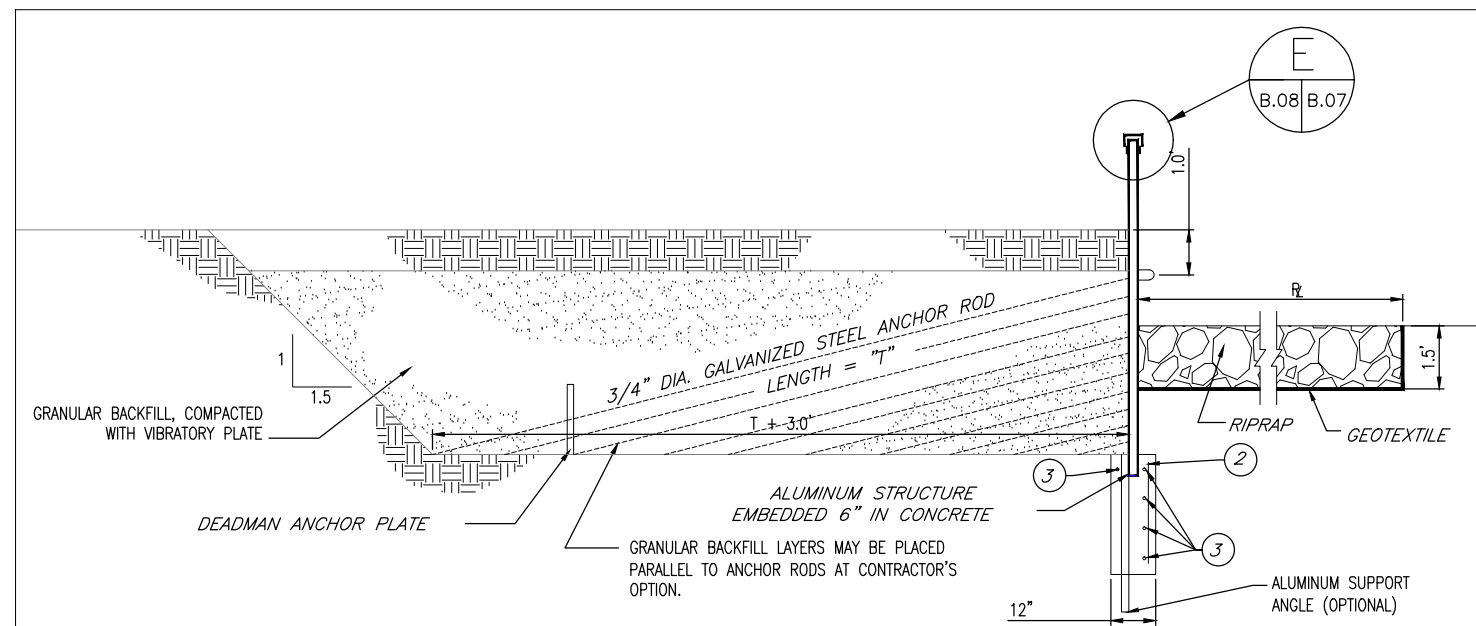
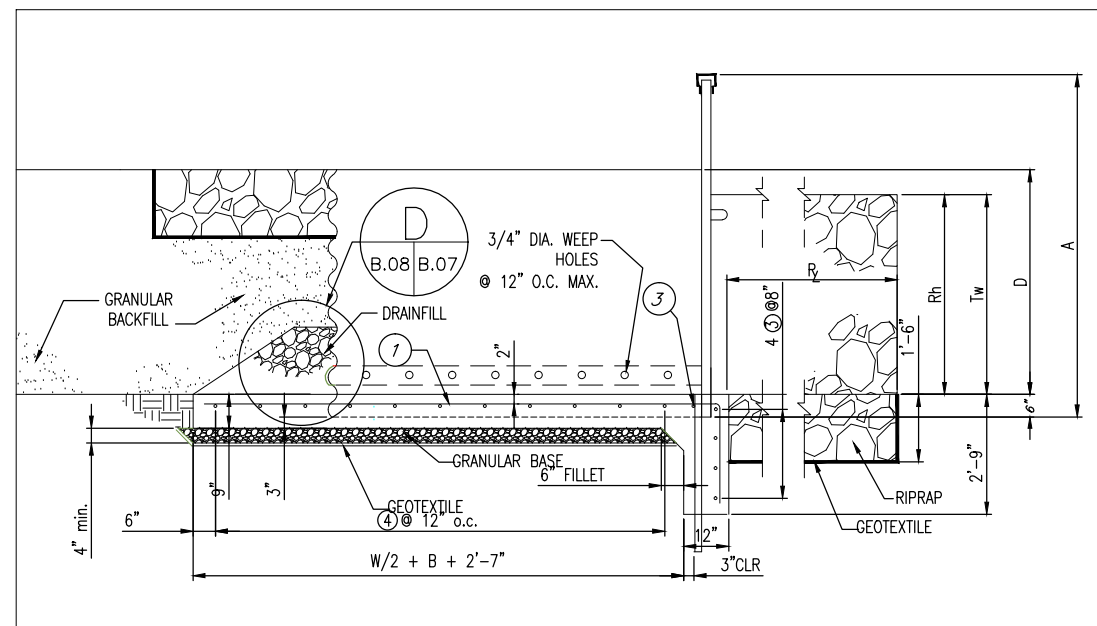
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B.07

STANDARD DWG. IA-1415

DATE Jan. 2014 PAGE 3 OF 4

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PROJECT

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Aluminum Drop Structure

SHEET

B.08

CONSTRUCTION NOTES

PLAN NOTES SUPERSEDE CONFLICTING PROVISIONS IN THE TECHNICAL SPECIFICATIONS.

1. WORK LIMITS WILL BE STAKED AT 100’ STATIONS ALONG THE $\varnothing$. ALL WORK SHALL BE ACCOMPLISHED WITHIN THE STAKED WORK LIMITS LINE.

2. ACCESS TO THE WORK AREAS IS AVAILABLE FROM FIELD ENTRANCES OFF PUBLIC ROADS. CONTRACTOR IS RESPONSIBLE TO SECURE PERMISSION OF COUNTY ENGINEER FOR OTHER ACCESS OR TO CONSTRUCT TEMPORARY ACCESS AS NEEDED. UNDER ANY CONDITION CONTRACTOR IS TO LIMIT CROP DAMAGES IN ACCESSING WORK LIMITS.

3. EXCAVATION AND BANK SHAPING IS REQUIRED TO BE CARRIED OUT FROM BOTH SIDES OF THE OPEN DITCH UNLESS OTHERWISE NOTED OR APPROVED BY ENGINEER. APPROXIMATELY EQUAL AMOUNTS OF SPOIL ARE TO BE PLACED ON BOTH SIDES OF THE DITCH, UNLESS OTHERWISE SPECIFIED ON PLANS. CONTRACTOR SHALL LIMIT, AS MUCH AS PRACTICAL, DISTURBANCE OF STABLE VEGETATED BANKS WHICH LIE OUTSIDE THE DESIGN CROSS SECTION. WHERE THE DITCH IS WIDER THAN THE DESIGN CROSS SECTION, CONTRACTOR SHALL EXCAVATE AS REQUIRED TO SHAPE BOTTOM TO BASE OF SIDE SLOPES. CONTRACTOR REQUIRED TO LEVEL EXISTING SPOIL BANK. THIS WORK IS SUBSIDIARY TO THE SPOIL BANK LEVELING.

4. ALL MAIN AND LATERAL PIPE SECTIONS FURNISHED ARE TO BE REINFORCED CONCRETE PIPE OF THE CLASSIFICATION OR STRENGTH REQUIRED ON THE PLANS AND REFERENCED IN THE SPECIFICATIONS (ASTM C76). EXCEPT WHERE OTHERWISE NOTED ON THE PLAN, ALL PIPE ARE TO BE LAID IN A MODIFIED STANDARD INSTALLATION TYPE 4 TRENCH (AMERICAN CONCRETE PIPE ASSOCIATION HANDBOOK.) AN UNSTABLE TRENCH BOTTOM SHALL BE STABILIZED WITH CRUSHED CRADLING ROCK MEETING MATERIAL SPEC. IN STD. SPEC. 312334 SEC. 2.3. MAIN PIPE OF TEES AND ELBOWS MAY BE UP TO 8 FT. LONG. ELBOW JOINTS ARE ASSUMED AT MID PIPE BUT IS NOT REQUIRED. PIPE CAPS ARE TO BE INSTALLED IN THE FIELD. ALL RCP TILE JOINTS SHALL BE WRAPPED WITH ENGINEERING FABRIC MEETING SPECIFICATION SECTION 33-4624 REQUIREMENTS AND SHALL BE CONSIDERED INCIDENTAL TO THE TILE BID ITEM.

WITH ENGINEER’S PRIOR APPROVAL, CONTRACTOR MAY SUBSTITUTE THE NEXT LARGER SIZE OF PIPE. THE SUBSTITUTION MUST PROVIDE FOR CONTINUOUS REACHES OF PIPE OF THE SAME SIZE. NECESSARY ADJUSTMENT TO TEES, ELBOWS AND JUNCTION BOXES MUST ALSO BE MADE AS REQUIRED – ALL AT NO COST TO THE OWNER.

WHERE MAXIMUM TRENCH WIDTH IS EXCEEDED, BUT BY NO MORE THAN 1.0 FOOT, THE PIPE SHALL BE BEDDED TO THE SPRING LINE IN A COMPACTED CRUSHED ROCK BEDDING STONE ENVELOPE. FOR WIDER TRENCH WIDTHS ENCASE THE PIPE IN THE SAME COMPACTED CRUSHED ROCK BEDDING STONE TO 12” COVER. THIS MATERIAL AND WORK IS SUBSIDIARY UNLESS EXCESS WIDTH IS DUE TO UNSTABLE TRENCH CONDITION.

CONTRACTOR IS REQUIRED TO LEAVE A SMALL MOUND OVER THE COMPLETED TILE TRENCH TO ALLOW SETTLEMENT OF TILE TRENCH WITH THE GOAL OF RESTORING GROUND CONTOURS.

WHERE POSSIBLE, MAINTAIN SURFACE WATER RUNOFF TO ROAD DITCH AT HISTORIC LOCATIONS. DIRECT SURFACE RUNOFF AWAY FROM TILE TRENCH AT ALL ROAD DITCHES.

5. DRAIN ALIGNMENT TURNS OF SPECIFIED ANGLES SHALL BE COMMERCIALY FABRICATED. THE LENGTH OF PIPE IN ALL TURNS WILL BE INCLUDED IN MEASUREMENT OF THE INCLUDING LINE FOR PAYMENT. ALIGNMENT TURN COMPENSATION IS FOR FABRICATION AND EXTRA COST OF FURNISHING AND INSTALLING SAME OVER THAT OF A TYPICAL PIPE SECTION INSTALLATION.

6. SPOIL BANK LEVELING. THE TOP 8 INCHES OF ALL LEVELED SPOIL, OLD AND NEW, IS TO BE TILLED BY CONTRACTOR WITH A CHISEL PLOW OR OTHER APPROVED IMPLEMENT. DISPOSE OF ROCKS AND OTHER DEBRIS EXPOSED BY THIS OPERATION. CHISELING AND FINISH GRADING ARE SUBSIDIARY TO THE SPOIL BANK LEVELING BID ITEM. MINOR SURFACE GRADING TO DRAIN SMALL IMPOUNDED AREAS IS INCLUDED IN THE WORK. INCLUDES GRADING TO ALLOW SURFACE WATER INTO DITCH AT THE LOCATIONS SHOWN ON THE PLANS.

ENTIRE SOIL SURFACE SHALL BE SHAPED TO DRAIN AWAY FROM THE DITCH AND SHALL BE GENERALLY LEVEL WITH ALLOWED GENTLE UNDULATIONS ON LINE PARALLEL TO DITCH. ENTIRE CHISELING AND FINISH GRADING ARE SUBSIDIARY TO THE SPOIL BANK LEVELING BID ITEM.

7. CLEARING AND GRUBBING. ALL BRUSH, BEAVER DAMS, AND STUMPS LOCATED WITHIN THE DITCH RIGHT-OF-WAY ARE TO BE CLEARED AND GRUBBED. NO CHEMICAL TREATMENT IS REQUIRED. SLOPES WHICH ARE NOT TRANSVERSABLE ARE TO BE HYDRAULICALLY SEEDED. CONTRACTOR MUST DRAG A WEIGHTED HARROW OVER THE SLOPE OR EMPLOY OTHER APPROVED MEANS PRIOR TO APPLYING SEED. ENGINEER MAY REQUIRE ADDITIONAL PASSES IF DITCH BANKS ARE NOT SUFFICIENTLY DISTURBED. NO FURTHER MEASUREMENT WILL BE MADE BY ENGINEER.

MISCELLANEOUS ROCK PILES, JUNK & RUBBISH LOCATED IN THE DISTRICT RIGHT-OF-WAY WHICH INTERFERE WITH THE EXCAVATION ARE TO BE DISPOSED OF BY BURIAL OR OTHER APPROVED MEANS. ALL JUNK NOT MEETING THE EXEMPTIONS FOR FARM WASTE OR FARM BUILDINGS UNDER DNR RULE 567-101.3 AND WHICH CONTRACTOR DOES NOT WISH TO SALVAGE IS TO BE STOCKPILED AT THE EDGE OF THE DISTRICT RIGHT-OF-WAY NEAR WHERE THE JUNK WAS FOUND OR AS OTHERWISE DIRECTED BY ENGINEER. ALL WORK DESCRIBED IN THIS PARAGRAPH IS SUBSIDIARY TO THE OPEN DITCH EXCAVATION BID ITEMS.

8. FERTILIZE, SEED & MULCH DISTURBED OPEN DITCH BANK SLOPES ABOVE RIPRAP OR THE NORMAL WATER SURFACE WITH A PORTABLE CYCLONE SEEDER OR BY OTHER APPROVED MEANS IMMEDIATELY UPON COMPLETION OF OTHER WORK AT EACH REPAIR SITE. EVIDENCE THAT SUFFICIENT MATERIAL WAS APPLIED IS REQUIRED. FERTILIZER: REGULAR COMMERCIAL FERTILIZER SPREAD UNIFORMLY AT THE FOLLOWING RATES:

SEED: PROVIDE ALL SEED SACKS WITH IDENTIFICATION TAGS ATTACHED OR CERTIFICATION OF SUPPLIER. GERMINATION TESTS LESS THAN ONE YEAR OLD REQUIRED. INOCULATE LEGUMES. UNIFORMLY MIX AND SPREAD THE SEED MIXTURE AT THE SPECIFIED RATES. RATES ARE FOR PURE LIVE SEED.

9. BRIDGES AND CULVERTS ARE TO BE COMPLETELY CLEAR OF SEDIMENT ABOVE THE PLAN SECTION AT THE TIME THE ENGINEER MAKES THE FINAL INSPECTION. THIS WORK IS SUBSIDIARY TO THE EXCAVATION BID ITEM.

10. MAINTAIN DRAINAGE OF THE OPEN DITCH, DRAINAGEWAYS, AND TRIBUTARY FACILITIES AT ALL TIMES DURING THE CONTRACT.

11. ALL MARKED PROPERTY PINS AND SURVEY MARKERS SHALL BE PROTECTED AND IF DISTURBED THEY WILL BE RESET AT CONTRACTORS’ EXPENSE WHEN NECESSARY.
12. CONNECT INTERCEPTED PRIVATE TILE, 10” DIAMETER OR SMALLER, TO NEW TILE WITH CORRUGATED POLYETHYLENE DRAINAGE TUBING OF NEXT LARGER SIZE. SECURELY GROUT BOTH CONNECTIONS IN 6” x 12” CONCRETE COLLAR AND PLACE PIPE ON AND IN FIRMLY COMPACTED CRUSHED ROCK BEDDING AND SOIL ENVELOPE TO LIMIT SETTLEMENT AND DEFLECTION. WHERE COVER WILL EXCEED 8.0 FEET EMBED CONNECTION IN MINIMUM 12 INCH THICK CRUSHED STONE BEDDING AS PER STD. SPEC. 312334 SEC. 2.1. PAYMENT FOR CRUSHED ROCK BEDDING SHALL BE LIMITED TO THREE TONS PER CONNECTION UNLESS OTHERWISE APPROVED BY ENGINEER PRIOR TO BACKFILL. THE FURNISHING AND PLACEMENT OF SPECIFIED CRUSHED ROCK FOR BEDDING AND ENVELOPE SHALL BE CONSIDERED PART OF, AND MEASURED AND PAID FOR UNDER, THE PIPE AND TILE BEDDING STONE BID ITEM. KEEP AND DELIVER TO ENGINEER A LOG OF CONNECTIONS INCLUDING LOCATION AND MATERIALS USED. CAPPING OF DOWNSTREAM LINE IS INCLUDED IN THIS BID ITEM. THE FURNISHING OF UP TO 20 FEET OF DRAINAGE TUBING IS INCLUDED IN THIS BID ITEM.

13. STORAGE OF MATERIALS IS ALLOWED IN THE WORK LIMITS OR IN OTHER APPROVED LOCATION SECURED BY CONTRACTOR. NO WORK OR EQUIPMENT OR MATERIAL STORAGE MAY BE DONE WITHIN ROAD RIGHTS-OF-WAY WITHOUT THE KNOWLEDGE AND PERMISSION OF THE COUNTY ENGINEER OR IDOT ENGINEER. CONTRACTOR IS RESPONSIBLE TO CONTACT COUNTY ENGINEER AND TO COOPERATE IN OBSERVANCE OF REQUIRED SAFETY MEASURES.

14. TOPSOIL. FOR ALL REACHES OF TRENCH EXCAVATION, THE CONTRACTOR IS REQUIRED TO SEGRETATE MUCH OF THE TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF TRENCH AND REMAINING EXCAVATION ON OPPOSITE SIDE. CONTRACTOR IS REQUIRED TO OPERATE SUCH THAT MUCH OF THE TOPSOIL IS RETURNED TO THE TOP FOOT OF THE COMPLETED TILE TRENCH BACKFILL. CONTRACTOR IS REQUIRED TO DESCRIBE TO ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

15. BLOWOUT REPAIR. SPOT REPLACE SECTION OF CRACKED OR BROKEN TILE WITH REINFORCED CONCRETE PIPE OF THE CLASSIFICATION OR STRENGTH REQUIRED ON THE PLANS AND REFERENCED IN THE SPECIFICATIONS (ASTM C76) OF SIZE MATCHING EXISTING TILE. BACKFILL AND COMPACT SOIL FROM BORROW AREA TO WITHIN 18” OF EXISTING GRADE. FILL TO EXISTING GRADING WITH TOPSOIL FROM TOPSOIL STRIP OF OPEN DITCH OR OUTSIDE SOURCE. (18” MINIMUM).

16. CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

17. FARM OPERATORS REASONABLE MEANS OF ACCESS SHALL BE PROVIDED BY CONTRACTOR TO BOTH SIDES OF THE TILE TRENCH AS NEEDED FOR FIELD WORK AND SHALL COMMUNICATE WITH FARM OPERATORS AS REQUIRED TO ACCOMPLISH THIS REQUIREMENT. UNRESOLVED DISAGREEMENTS REGARDING ADEQUATE ACCESS ARE TO BE IMMEDIATELY REPORTED TO THE ENGINEER BY CONTRACTOR.

18. WEED CONTROL. CONTRACTOR IS REQUIRED TO CONTROL WEED GROWTH WITHIN THE WORK LIMITS AS NEEDED TO PREVENT WEEDS FROM GOING TO SEED. THIS WORK IS SUBSIDIARY TO THE TILE INSTALLATION WORK, OPEN DITCH EXCAVATION AND RCP BID ITEMS.

19. UTILITIES. CONTRACTOR IS RESPONSIBLE TO NOTIFY UTILITY COMPANIES AND TO COOPERATE WITH THEM IN THE LOCATION, MARKING AND PROTECTION OF THEIR FACILITIES. CONTRACTOR IS TO IMMEDIATELY NOTIFY ENGINEER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. SOME UTILITIES MAY BE APPROXIMATELY SHOWN ON THE PLANS, BUT NOT ALL.

20. PRIOR TO ANY WORK AT THE SITE, CONTRACTOR SHALL EXAMINE ANY APPLICABLE DRAWINGS AVAILABLE FROM THE OWNER OR ENGINEER, AND CONSULT THE OWNER’S PERSONNEL AND THE INVOLVED UTILITY COMPANY. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT. BEFORE YOU DIG: IOWA 1-CALL #1-800-292-8989

21. PIPE WORK QUANTITIES ARE ESTIMATED BASED ON PRELIMINARY SURVEY INFORMATION. MOST PIPE WORK LOCATIONS ARE SHOWN ON THE PLANS BUT THESE MAY CHANGE AND THERE WILL BE NEW PIPE WORK LOCATIONS ADDED DURING THE COURSE OF THE WORK. WORK TO BE DONE AT EACH LOCATION WILL BE DETERMINED IN THE FIELD. CONTRACTOR’S MOVEMENTS BETWEEN THE SEVERAL MARKED PIPE WORK SITES AND ANY ADDED SITES ON THE ENTIRE DITCH DURING THE ENTIRE CONTRACT PERIOD IS CONSIDERED SUBSIDIARY TO THE PIPE WORK BID ITEM.

22. SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE OF AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTOR’S, ENGINEER’S AND OWNER’S PERSONNEL. ALL WORK SHALL BE DONE ACCORDING TO OSHA STANDARDS FOR PROTECTION OF LIFE. NOTHING INDICATED ON THE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATION.

23. RIPRAP SHALL BE IDOT EROSION STONE. GROUT SHALL COMPLY WITH IDOT STD SPEC 2507 FOR MATERIAL AND INSTALLATION, INCLUDING CURING. ALSO SEE SPECIFICATION SECTION 033000 AS APPROPRIATE.

24. FENCE CUTS. EXISTING FENCES ARE TO BE REMOVED TO THE WIDTH NECESSARY TO DO THE WORK PROPERLY.

25. MANUFACTURED PIPE FIXTURES SHALL BE BUILT IN CONFORMANCE WITH THE FOLLOWING IDOT STANDARD SPECIFICATIONS.

ELBOW – DR-141
PIPE CAP – DR-142
TEE – DR-142
APRON SECTION – DR-201

26. CORRUGATED POLYETHYLENE DRAINAGE TUBING SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 449.
- COMMON ABBREVIATIONS FOUND IN THESE PLANS
- | | |
|--|--------------------------------------|
| DIA – DIAMETER | F&I – FURNISH & INSTALL |
| EL. OR ELEV. – ELEVATION | UAC = USE AS CONSTRUCTED |
| N – NORTHING | TE = TILE EXTENSION |
| E – EASTING | AG = ANIMAL GUARD |
| BM – BENCH MARK | FG = FLOOD GATE |
| ROW – RIGHT-OF-WAY | RS & R = REMOVE, SALVAGE & REINSTALL |
| NO – NUMBER | SD = SURFACE DRAIN |
| IDOT – IOWA DEPARTMENT OF TRANSPORTATION | CMP = CORRUGATED METAL PIPE |
| RF-X – CURRENT IDOT STANDARD ROAD PLAN OR DETAIL | RCP = REINFORCED CONCRETE PIPE |
| HDPE – HEAVY DUTY POLYETHYLENE | |
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- PROJECT

STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA
- | REVISION SCHEDULE | | |
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| PROJECT NO. | 13-16319 |
| FILE NAME | C.01 CONSTRUCTION NOTES |
| DRAWN BY | JKF/TAC |
| DESIGNED BY | KLR |
| REVIEWED BY | KLR/NRF |
| ISSUE DATE | 3-18-2015 |
- CLIENT PROJECT NO. -
- TITLE

CONSTRUCTION NOTES

SHEET

C.01
- SAVED DATE: 3/20/2015 FILE PATH: F:\16000\16300-16399\16319 JOINT.DD #1 STORY AND MARSHALL COUNTY\16319 CIVIL-SURVEY\16319 CIVIL PRODUCTION DRAWINGS\C.01 CONSTRUCTION NOTES.DWG

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ESTIMATED PROJECT QUANTITIES				
REFER TO SPECIFICATIONS SECTION 012210 FOR MEASUREMENT AND PAYMENT OF ITEMS				
ITEM NUMBER	SPECIFICATION ITEM CODE	ITEM	UNIT	QUANTITY
1	312334	CLASS 10 EXCAVATION	CY	1,100
2	312335	OPEN DITCH EXCAVATION	CY	10,700
3	312335	SPOIL BANK LEVELING - TWO SIDES	STA	31.6
4	334114	CORRUGATED METAL PIPE SURFACE DRAIN, 15" DIA.	LF	180
5	334114	CORRUGATED METAL PIPE SURFACE DRAIN, 18" DIA.	LF	105
6	334114	CORRUGATED METAL PIPE SURFACE DRAIN, 24" DIA.	LF	90
7	334114	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 15" DIA.	EA	4
8	334114	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 18" DIA.	EA	2
9	334114	CORRUGATED METAL PIPE SURFACE DRAIN APRON, 24" DIA.	EA	2
10	334114	CORRUGATED METAL PIPE TILE EXTENSION, 12" DIA.	LF	60
11	334114	CORRUGATED METAL PIPE TILE EXTENSION, 15" DIA.	LF	60
12	334114	CORRUGATED METAL PIPE TILE EXTENSION, 18" DIA.	LF	60
13	334617	REINFORCED CONCRETE PIPE, 42" DIA., CLASS 3	LF	5,171
14	334617	REINFORCED CONCRETE PIPE, 27" DIA., CLASS 3	LF	70
15	334617	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	15
16	334910	IDOT SW-401 CIRCULAR STORM SEWER MANHOLE, 84" DIAMETER	EA	1
17	PER PLAN	42" DIAMETER, R.C.P. ELBOW SECTION, FABRICATION ONLY	EA	11
18	PER PLAN	ALUMINUM DROP STRUCTURE	LS	1
19	012210	CRUSH IN PLACE AND BURY EXISTING MAIN TILE	LF	5,200
20	012210	REMOVAL OF EXISTING HEADWALL	LS	1
21	313700	RIPRAP, IDOT CLASS E	TN	215
22	334624	GEOTEXTILE FABRIC	SY	350
23	334617	SPOT TILE EXPLORATION	HR	15
24	311004	CLEARING AND GRUBBING	LS	1
25	329221	SEED AND FERTILIZE OPEN DITCH	STA	31.6
26	329221	MULCH OPEN DITCH	STA	31.6
27	334617	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	350
28	PER PLAN	SILT FENCE	LF	300
29	PER PLAN	REMOVAL OF SILT FENCE	LF	300
30	312334	FENCE CUTS	EA	2
31	012210	MOBILIZATION	LS	1



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STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1
 STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

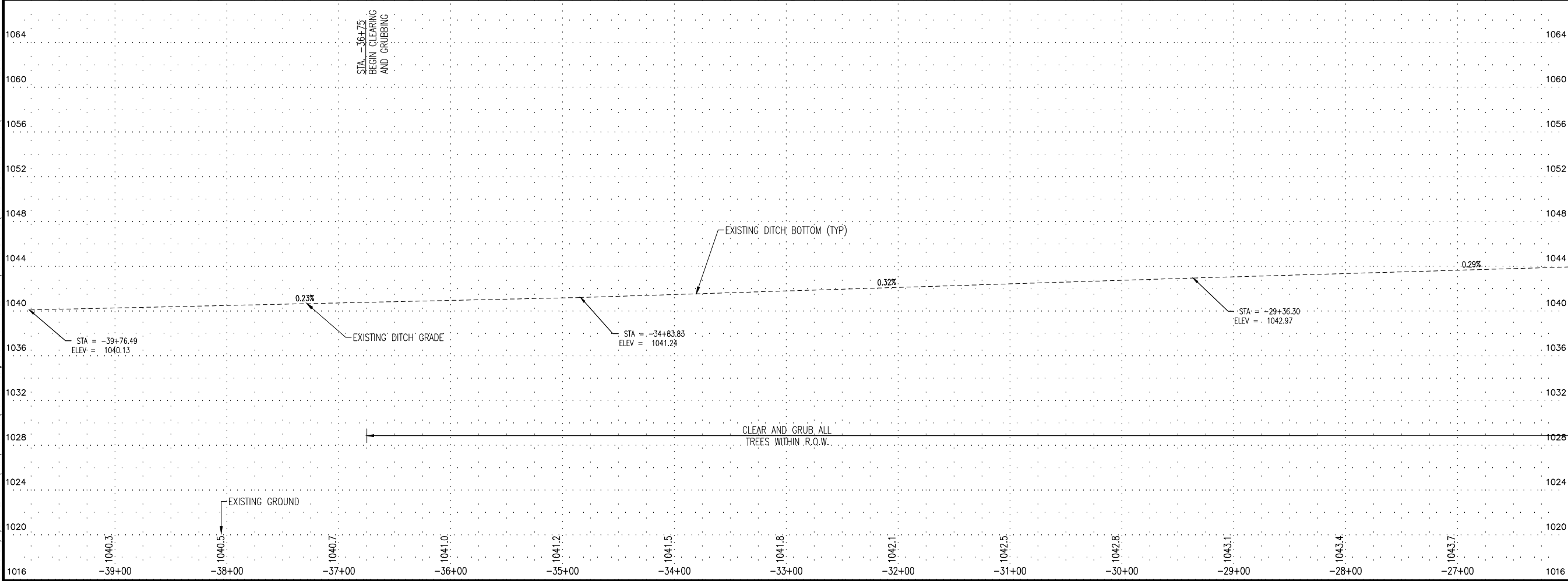
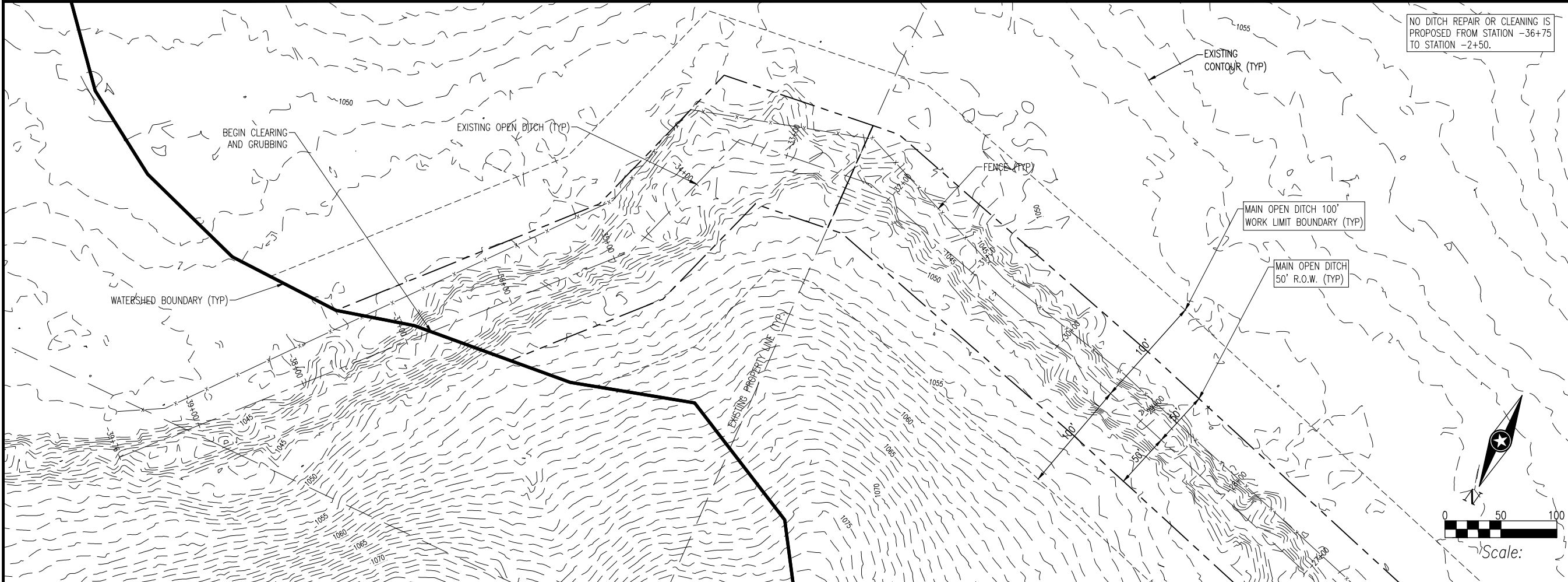
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DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
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ESTIMATED PROJECT QUANTITIES

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STORY AND MARSHALL CO.	IOWA

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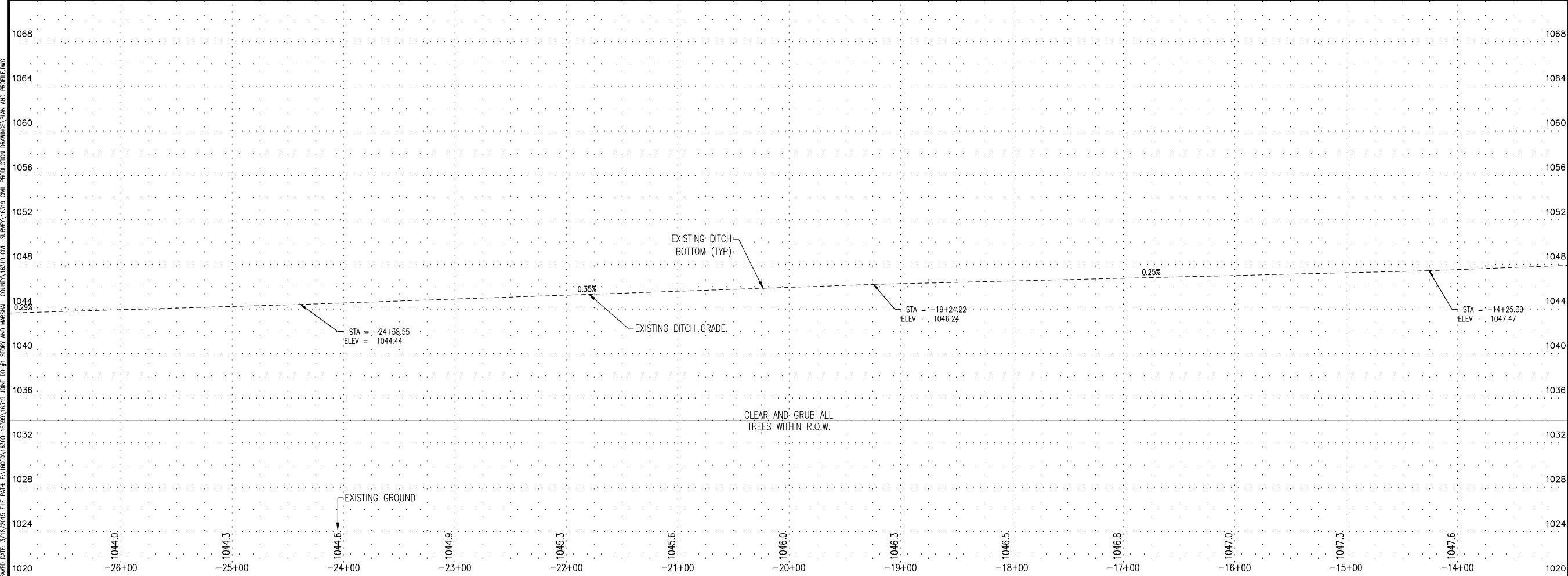
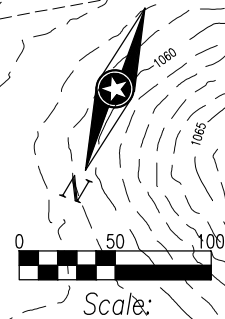
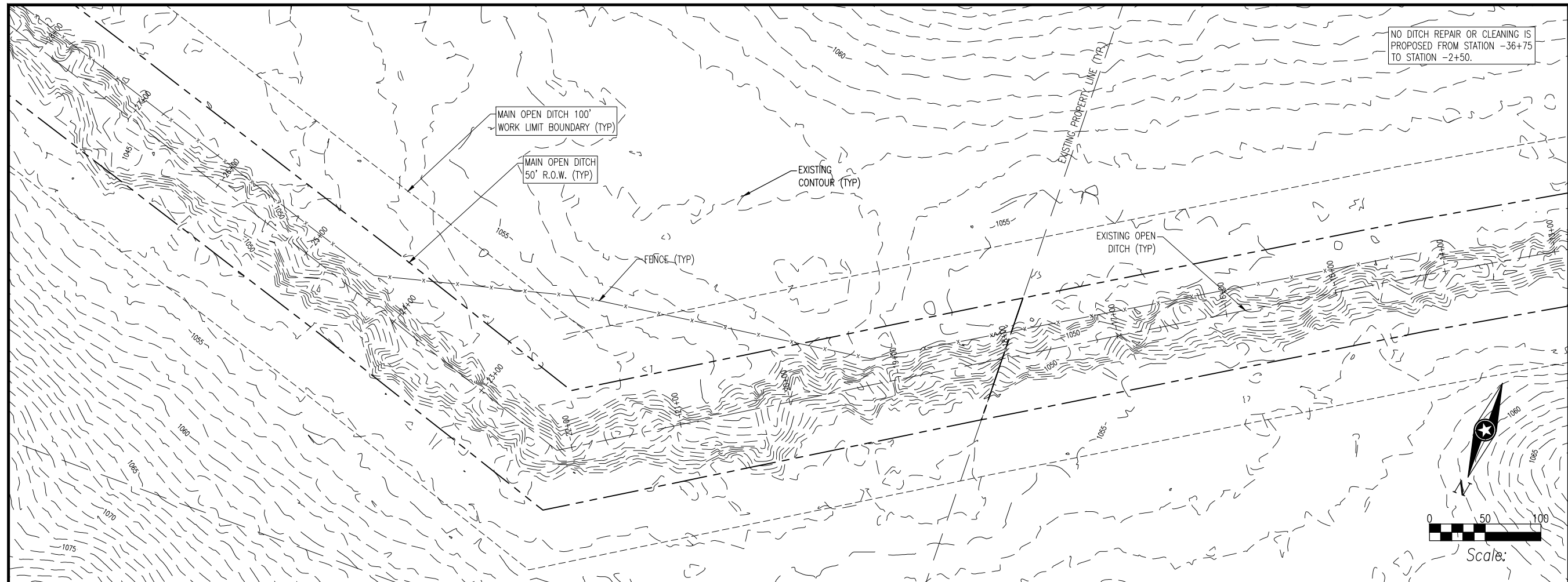
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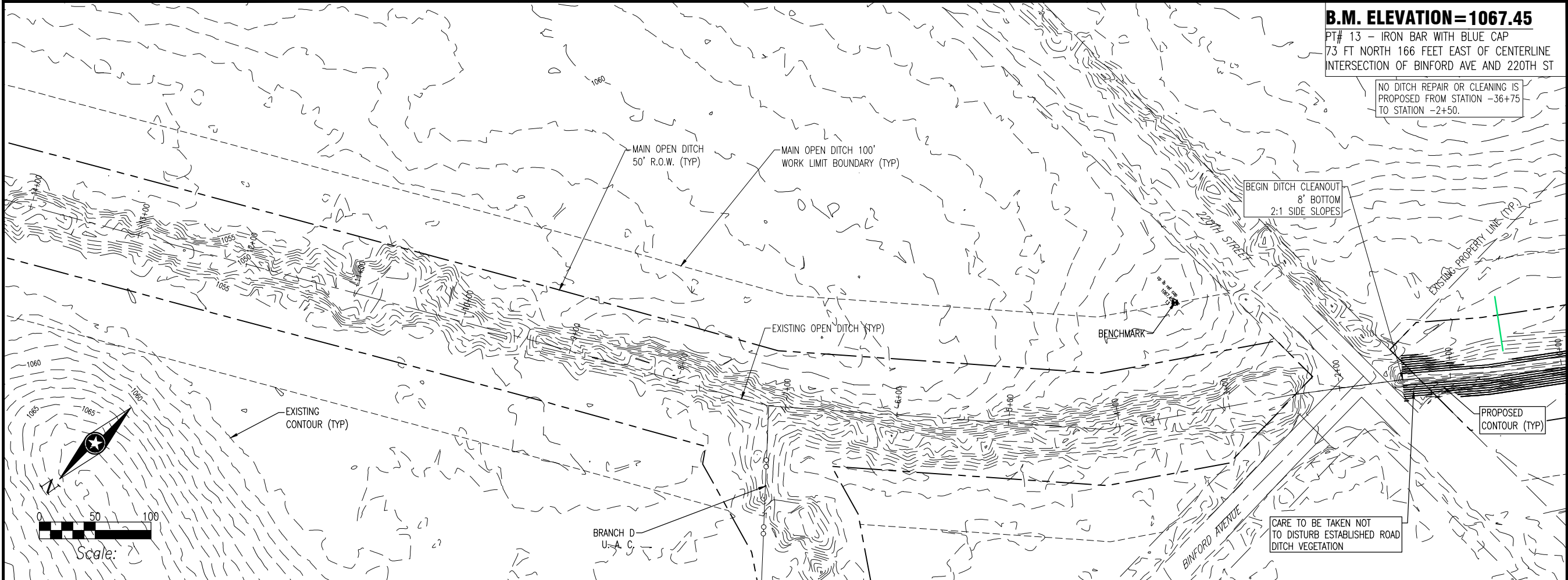
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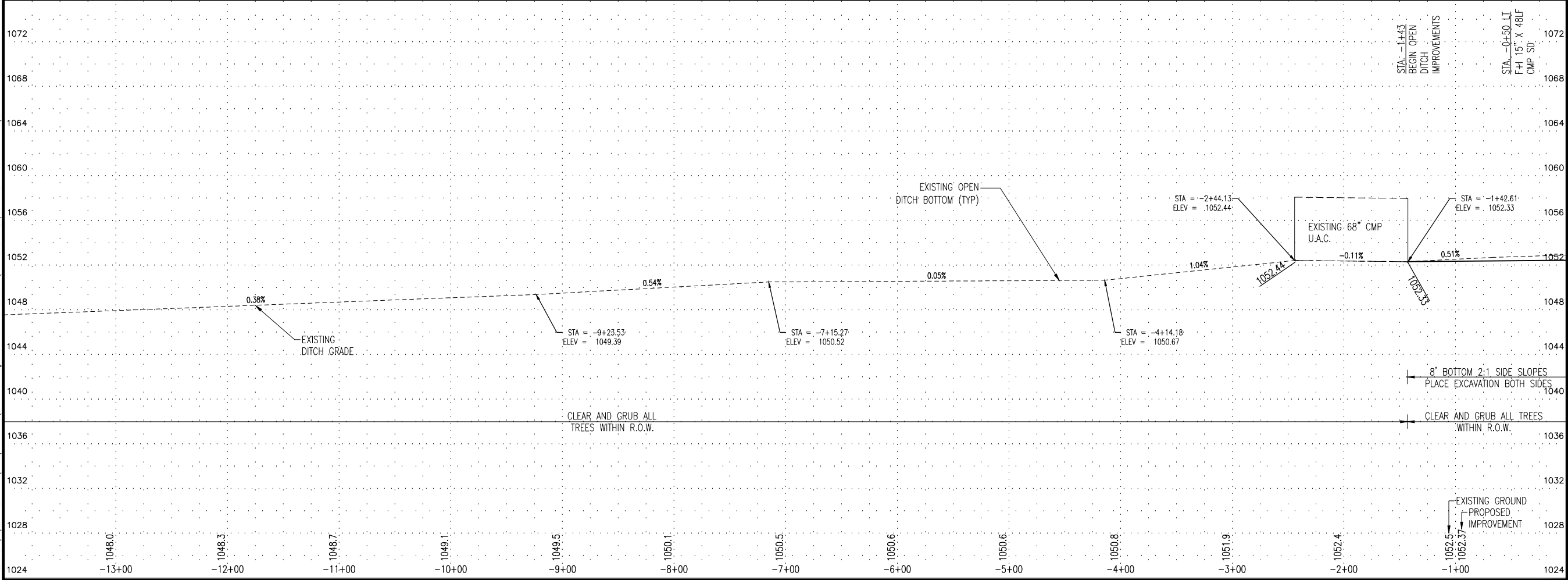
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B.M. ELEVATION=1067.45

PT# 13 - IRON BAR WITH BLUE CAP
73 FT NORTH 166 FEET EAST OF CENTERLINE
INTERSECTION OF BINFORD AVE AND 220TH ST

NO DITCH REPAIR OR CLEANING IS
PROPOSED FROM STATION -36+75
TO STATION -2+50.

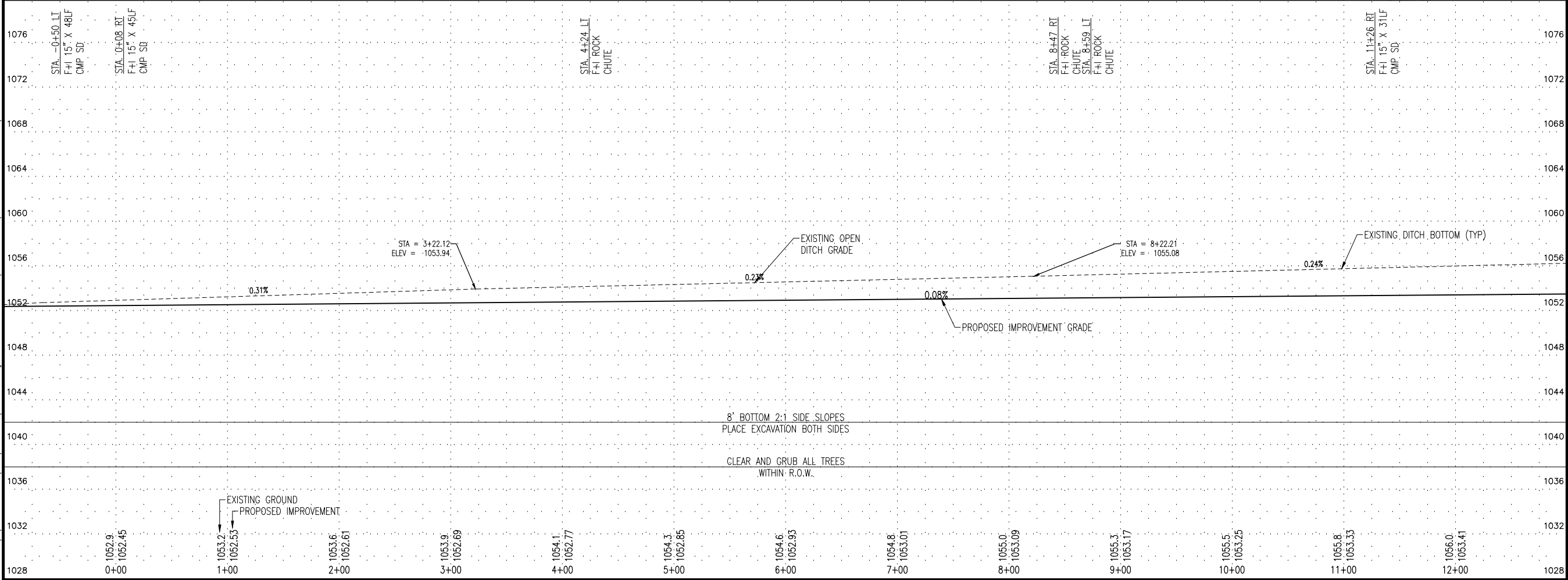
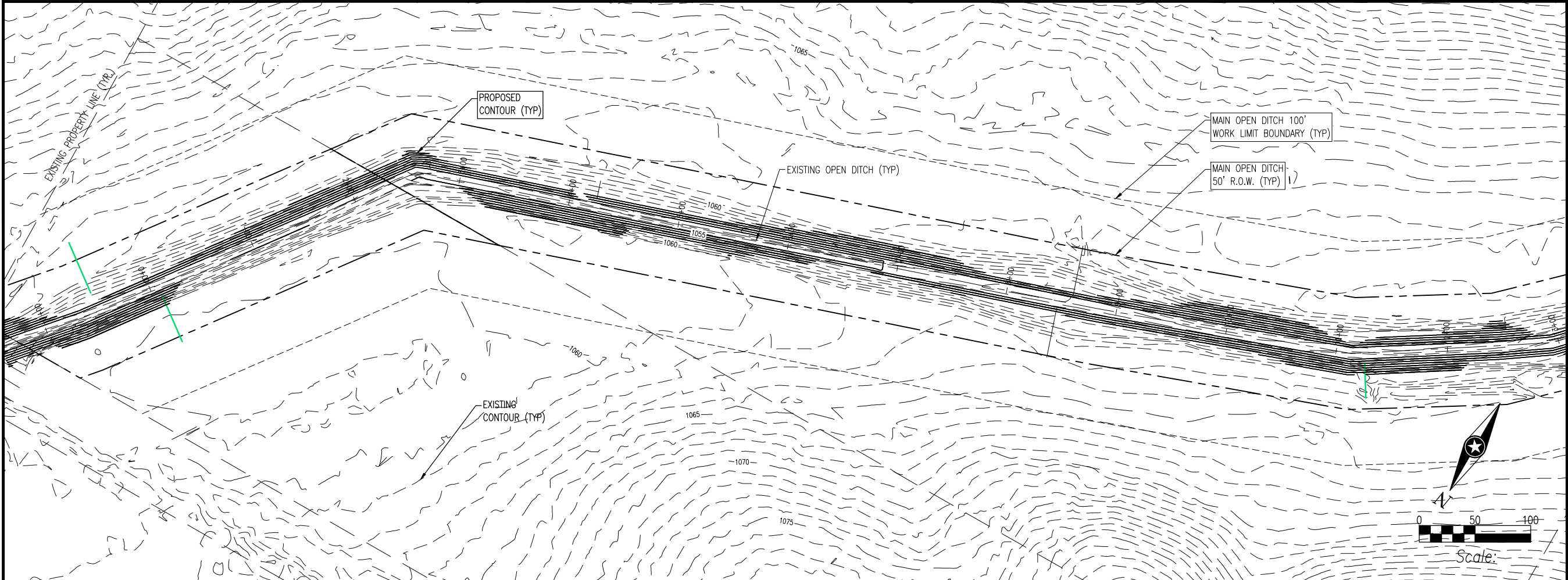


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STORY AND MARSHALL CO.		IOWA	

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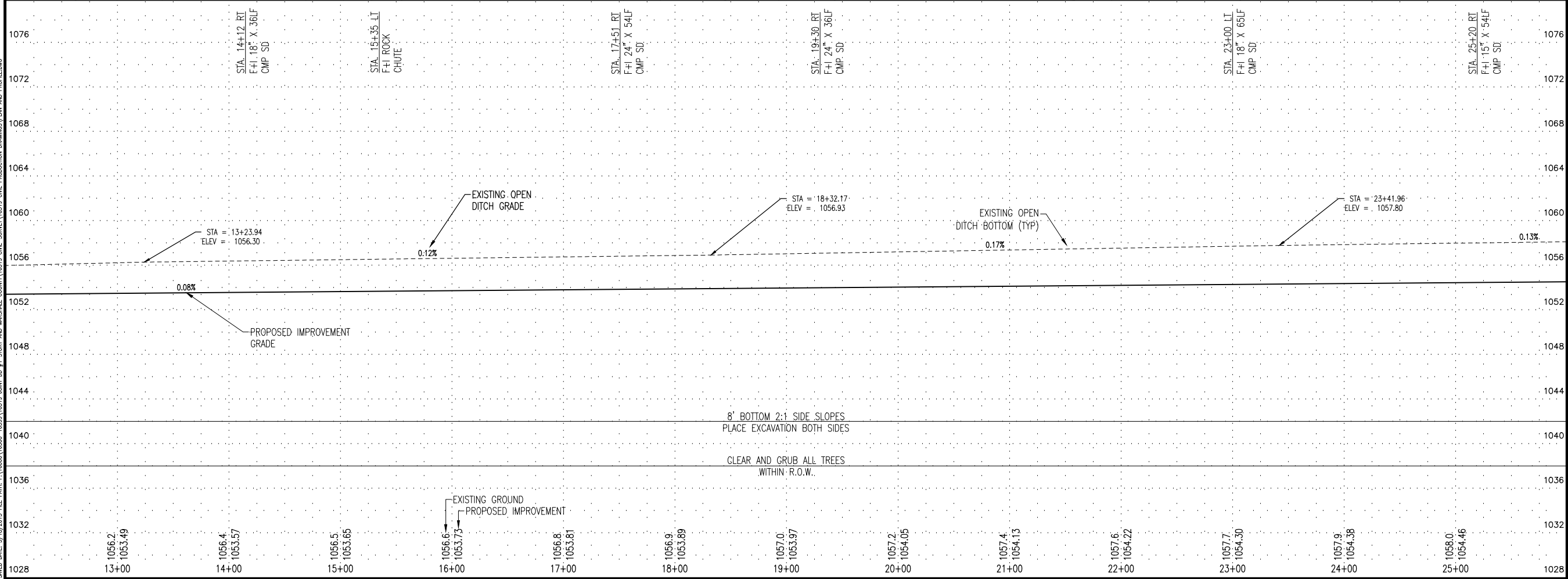
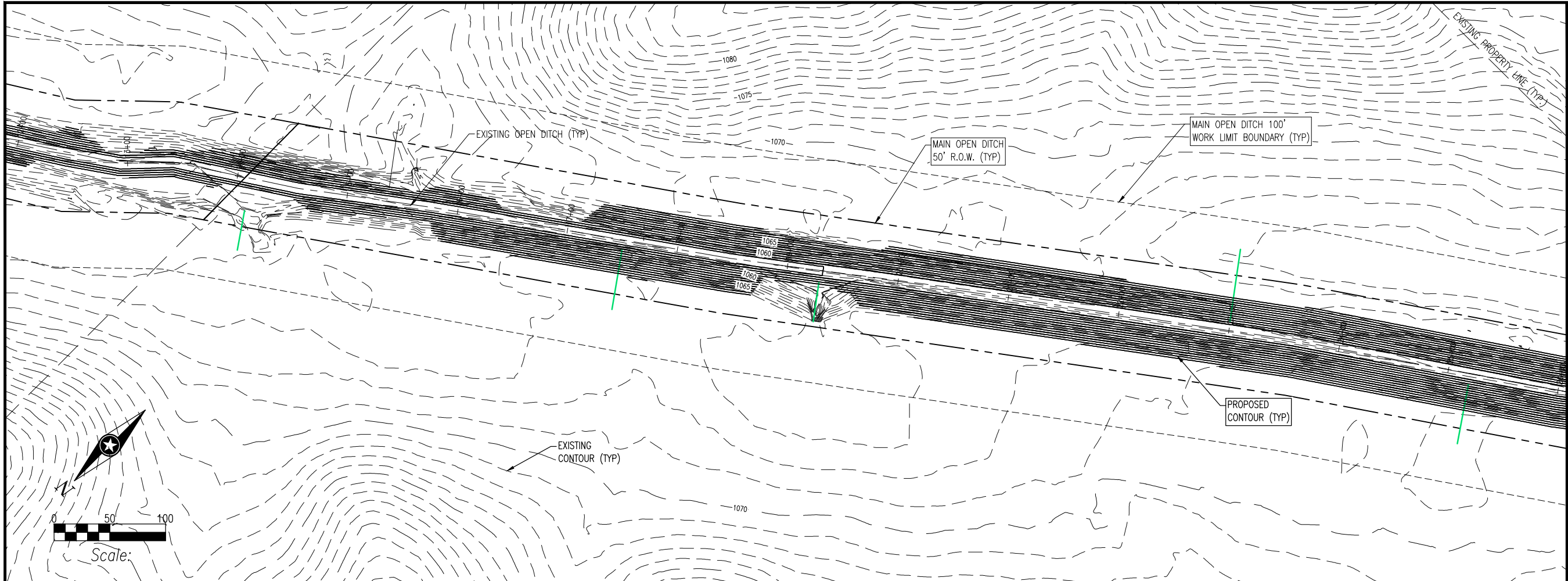
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STORY AND MARSHALL CO. IOWA

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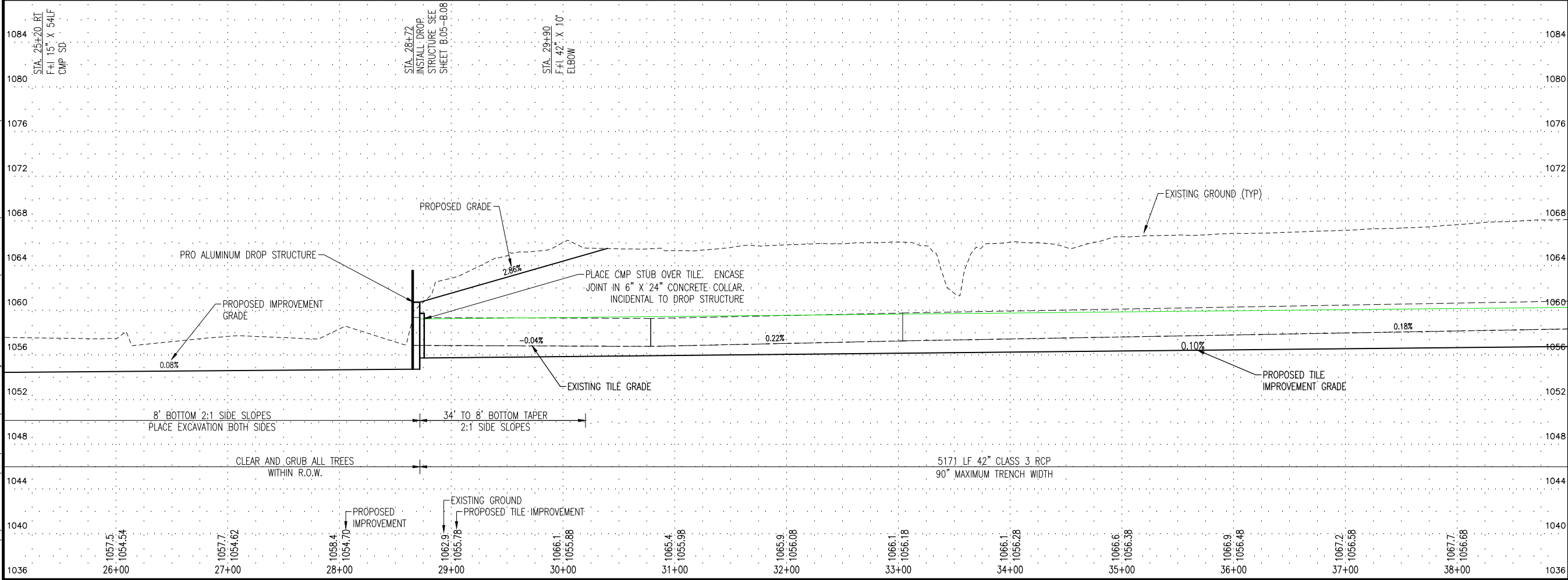
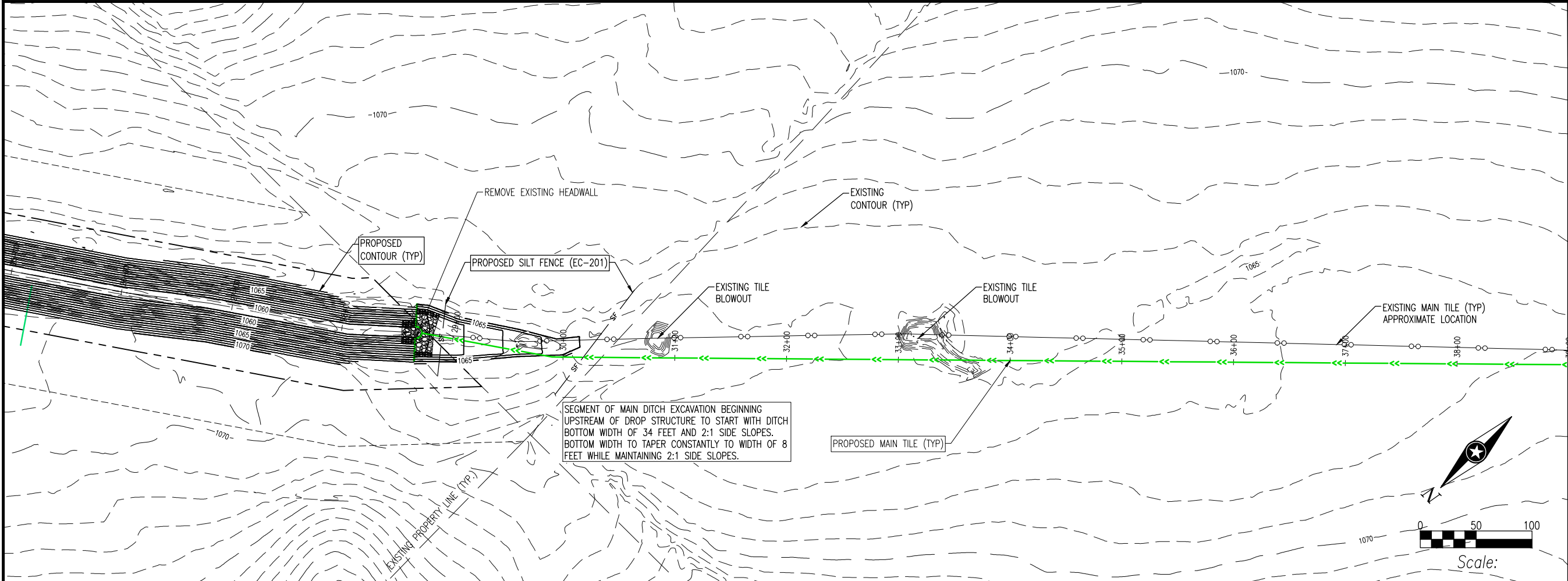
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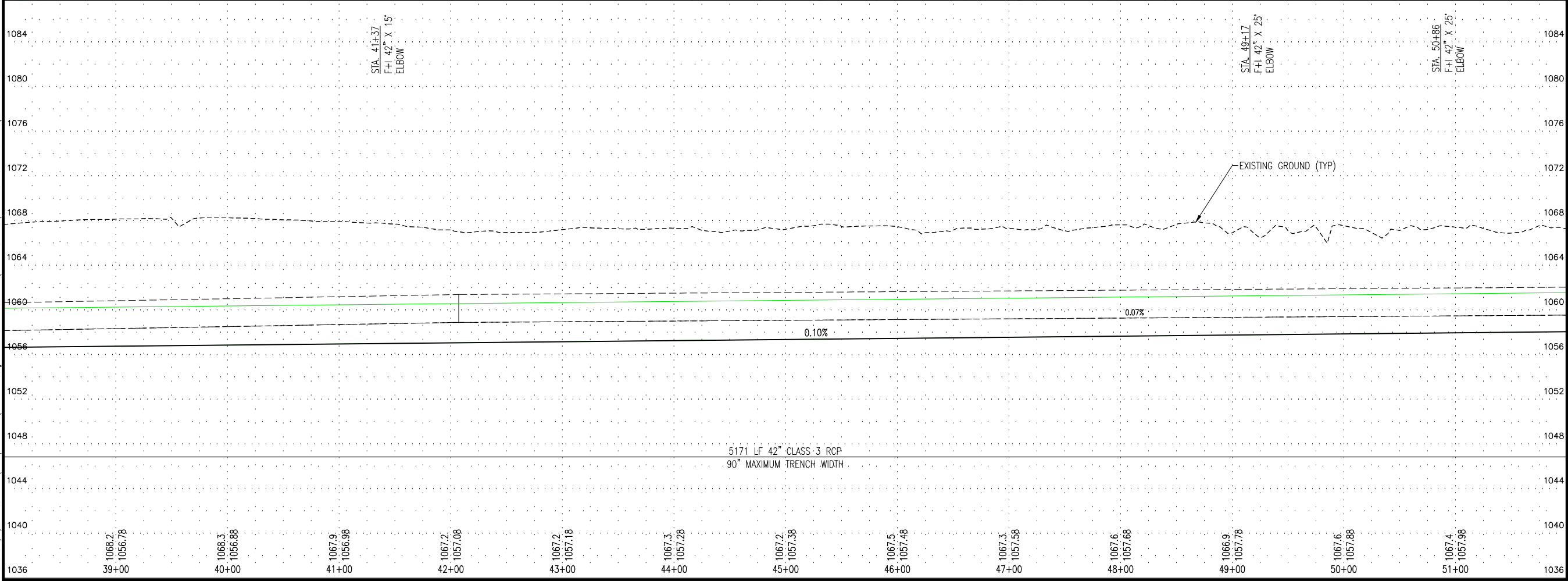
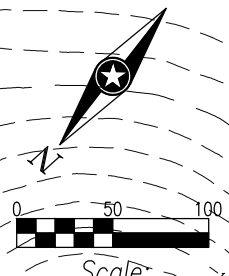
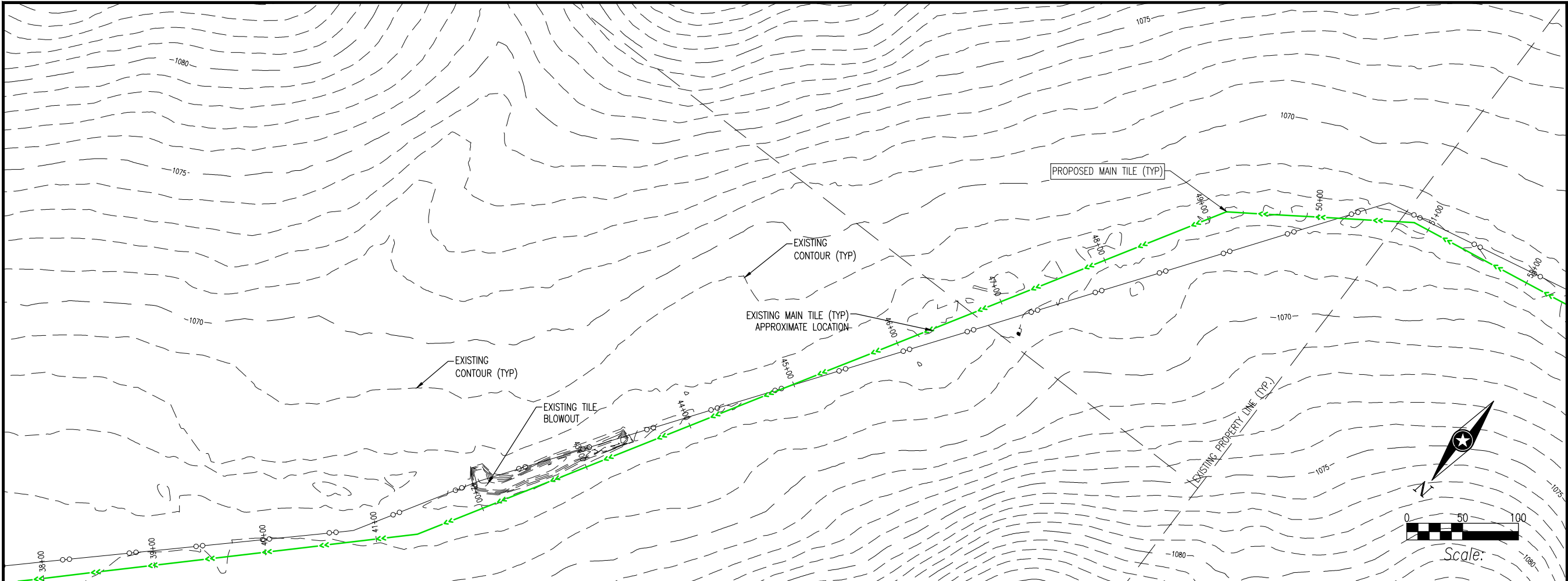
STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

PLAN AND PROFILE

D.06

SAVED DATE: 3/16/2015 FILE PATH: E:\16000\16300-16399\16319 CIVIL\PRODUCTION DRAWINGS\PLAN AND PROFILES\



LIVELY,
DOUGLAS J

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COUNTIES
JOINT DRAINAGE
DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 13-16319

FILE NAME PLAN AND PROFILE

DRAWN BY NJF/JKF/TAC

DESIGNED BY KLR

REVIEWED BY KLR

ISSUE DATE 3/18/2015

CLIENT PROJECT NO.

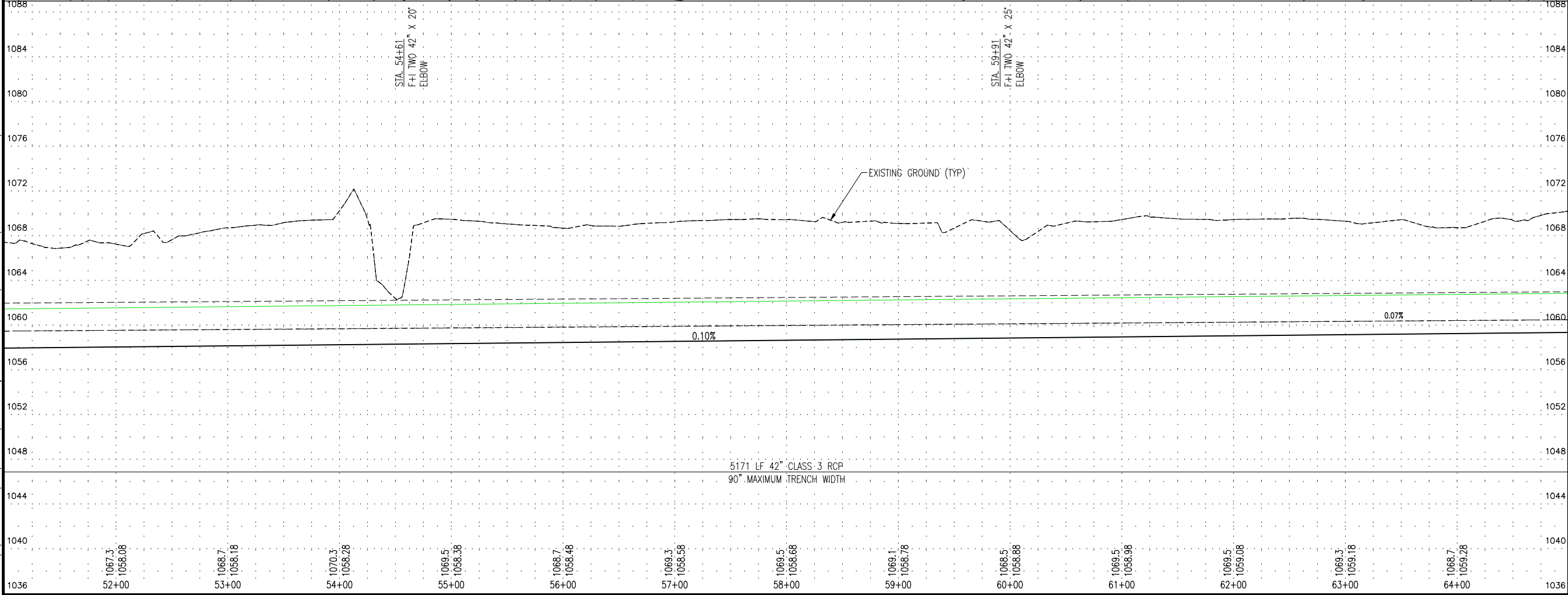
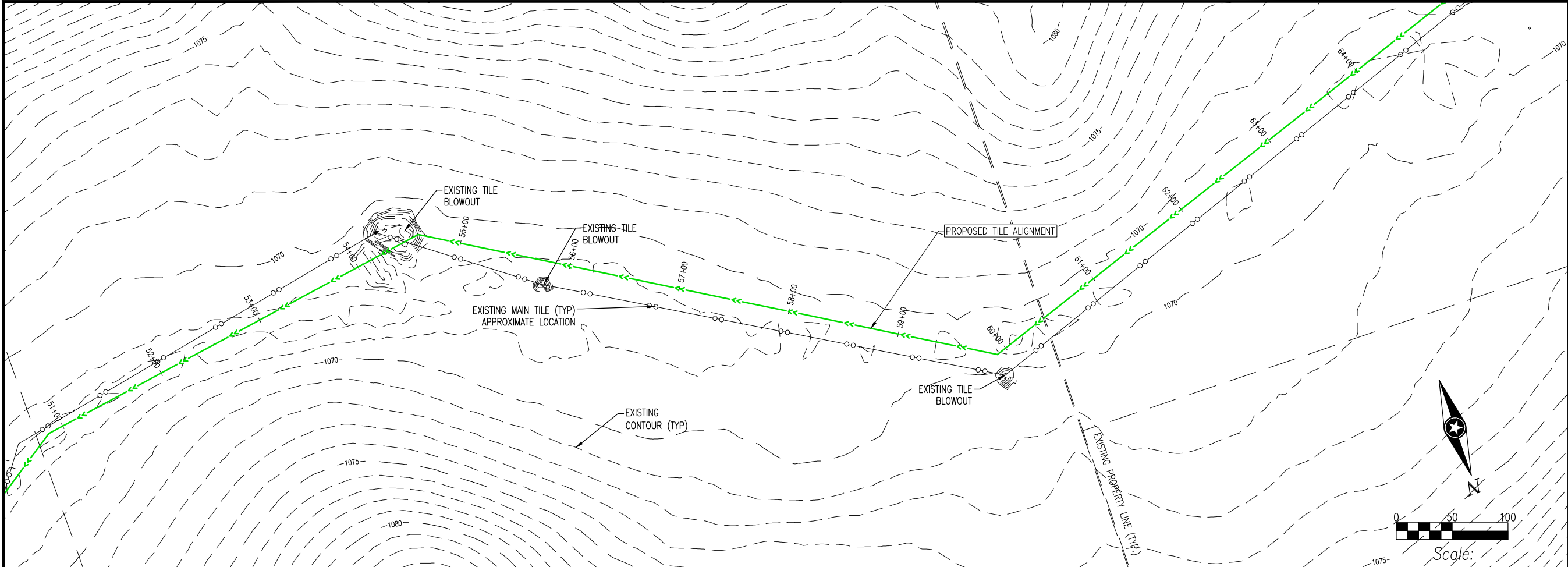
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PLAN AND
PROFILE

SHEET

D.07

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 PROJECT: STORY AND MARSHALL COUNTY 16319 CIVIL-SURVEY 16319 CIVIL PRODUCTION DRAWINGS PLAN AND PROFILES



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PROJECT

STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.

16319

FILE NAME

PLAN AND PROFILE

DRAWN BY

NJF/JKF/TAC

DESIGNED BY

KLR

REVIEWED BY

KLR

ISSUE DATE

3/18/2015

CLIENT PROJECT NO.

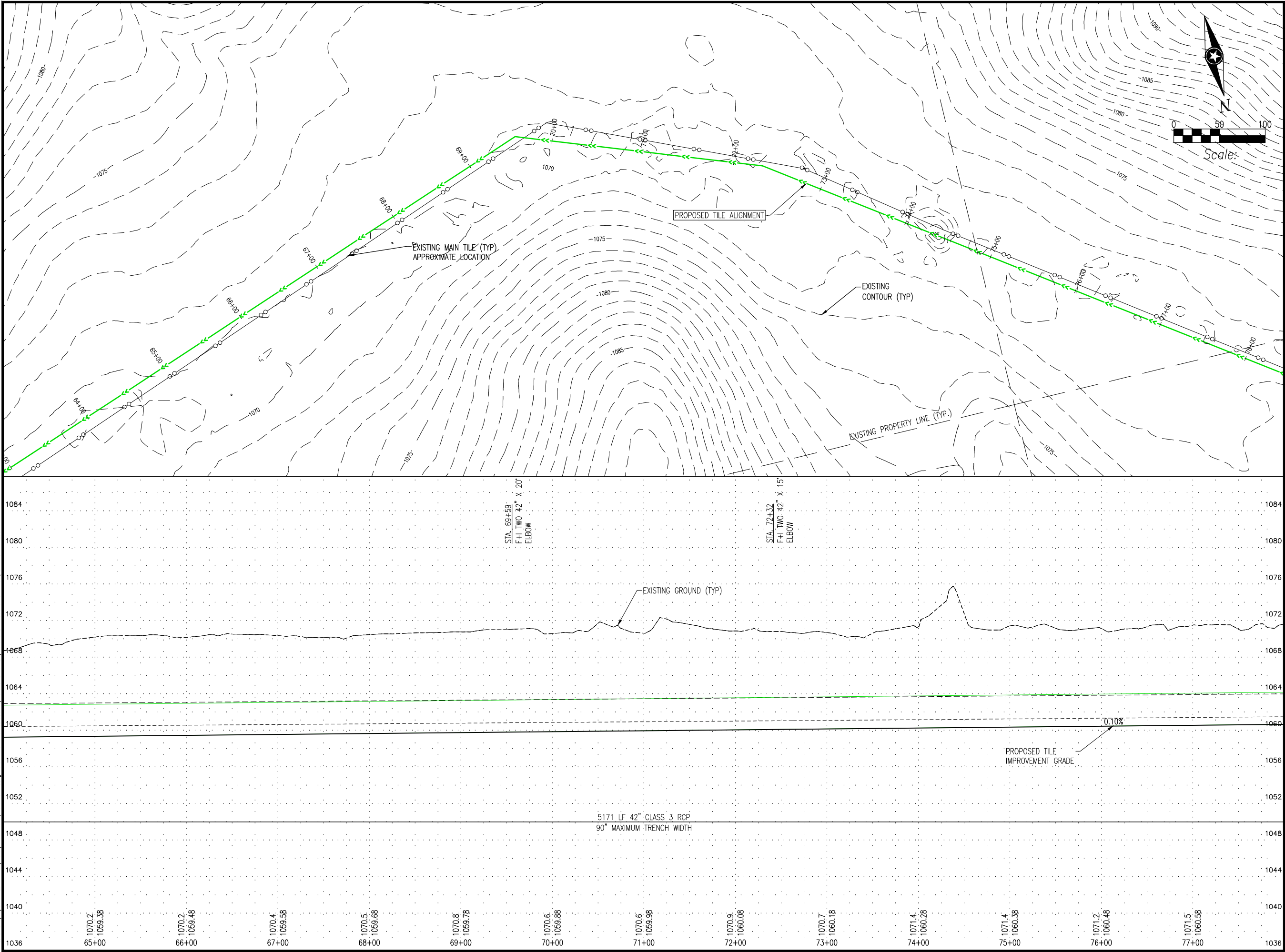
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PROJECT

**STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.

16319

FILE NAME

PLAN AND PROFILE

DRAWN BY

NJF/JKF/TAC

DESIGNED BY

KLR

REVIEWED BY

KLR

ISSUE DATE

3/18/2015

CLIENT PROJECT NO.

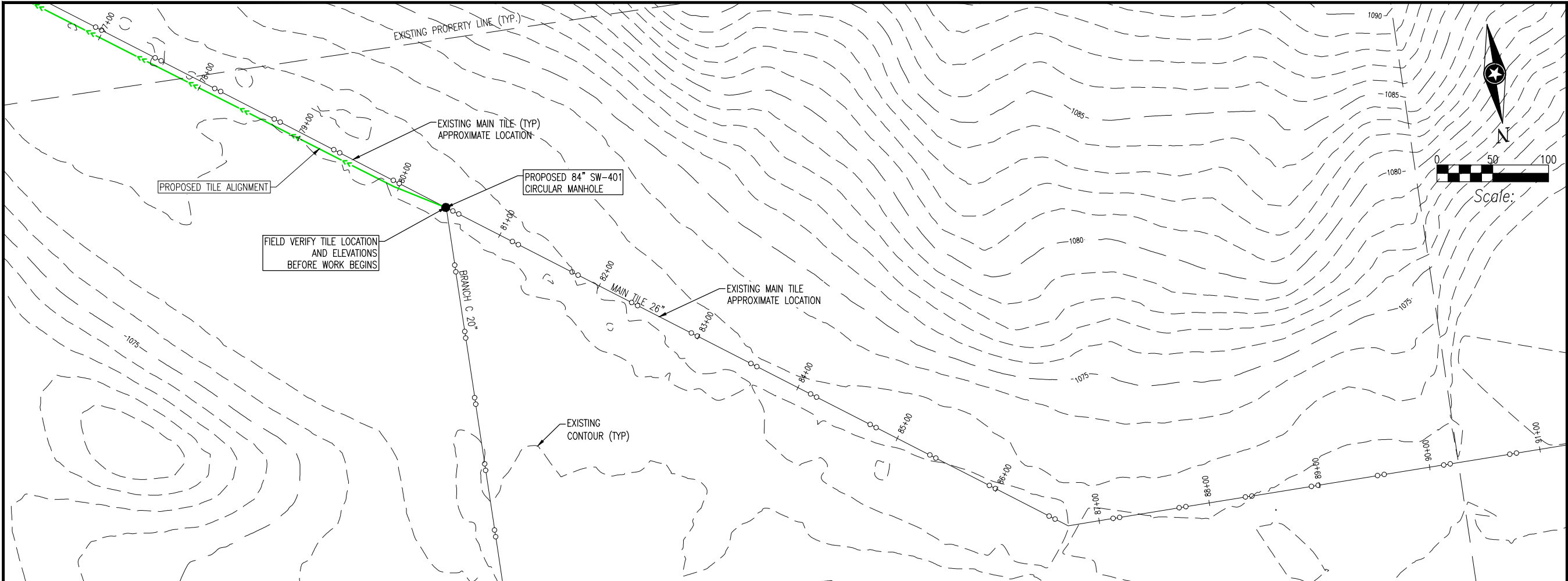
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PROJECT

**STORY AND MARSHALL COUNTIES
JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO.
 IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	16319
FILE NAME	PLAN AND PROFILE
DRAWN BY	NJF/JKF/TAC
DESIGNED BY	KLR
REVIEWED BY	KLR
ISSUE DATE	3/18/2015
CLIENT PROJECT NO.	-

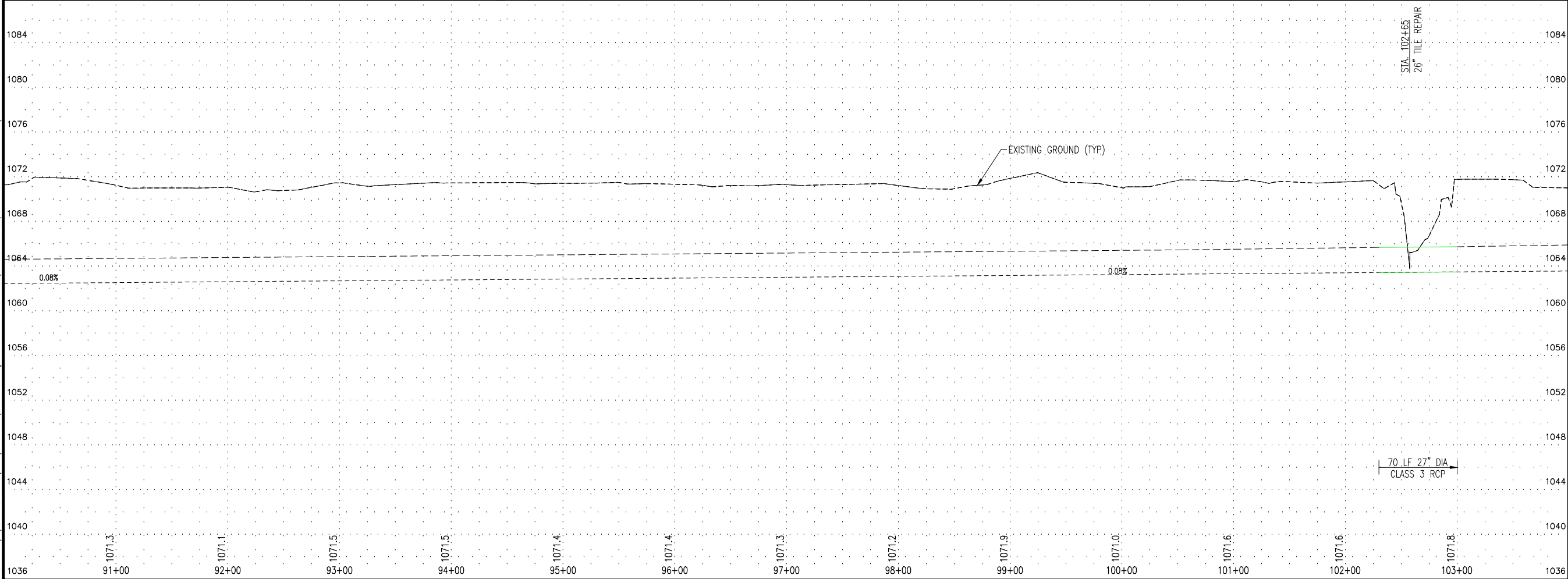
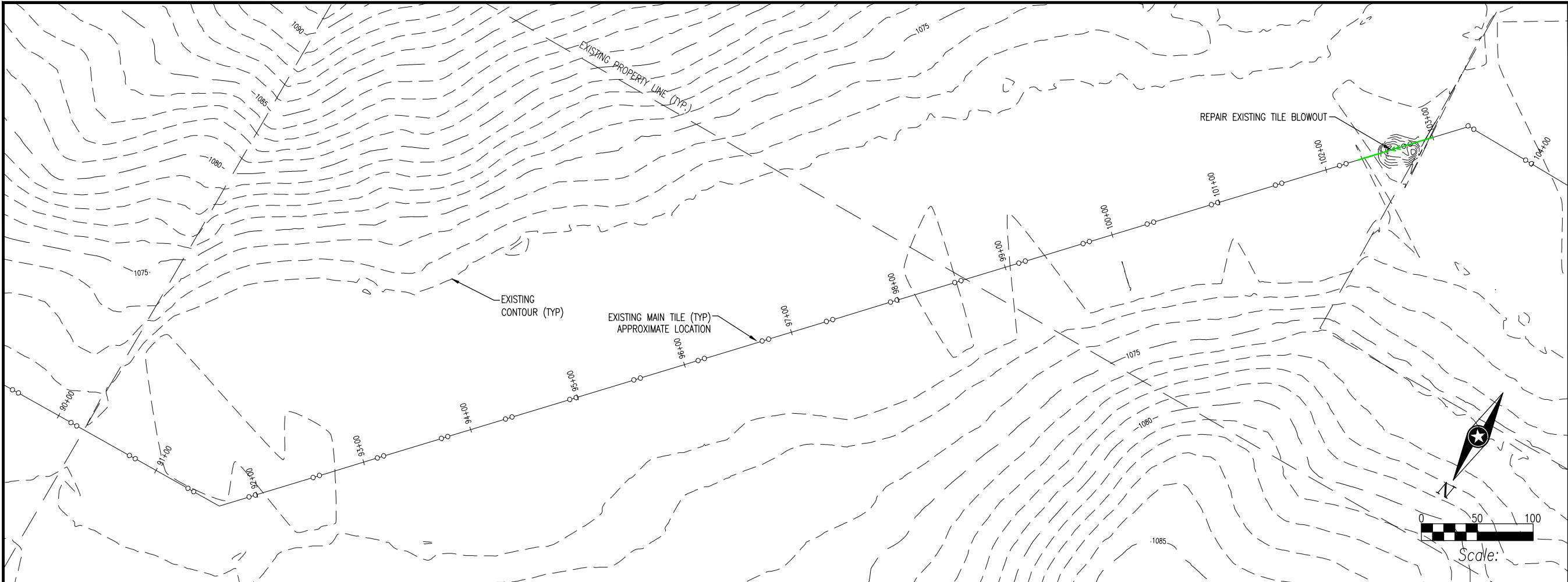
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PLAN AND PROFILE

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PROJECT

STORY AND MARSHALL COUNTIES
 JOINT DRAINAGE DISTRICT NO. 1
 STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.

16319

FILE NAME

PLAN AND PROFILE

DRAWN BY

NJF/JKF/TAC

DESIGNED BY

KLR

REVIEWED BY

KLR

ISSUE DATE

3/18/2015

CLIENT PROJECT NO.

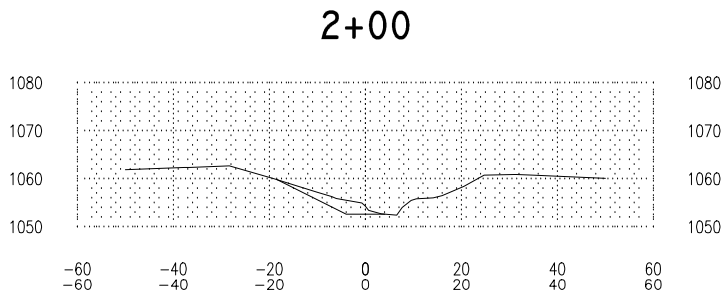
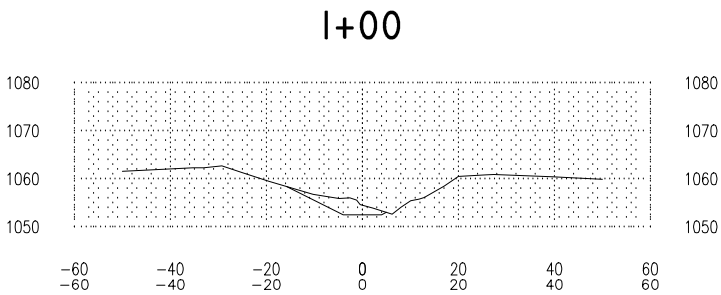
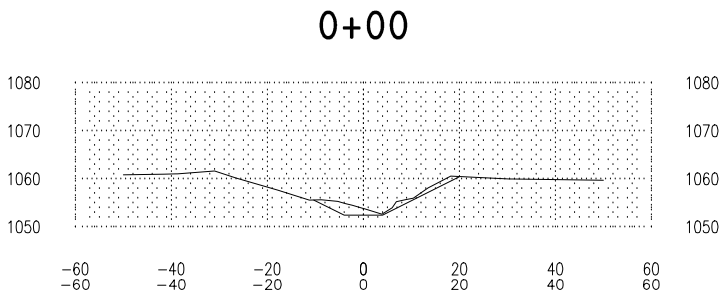
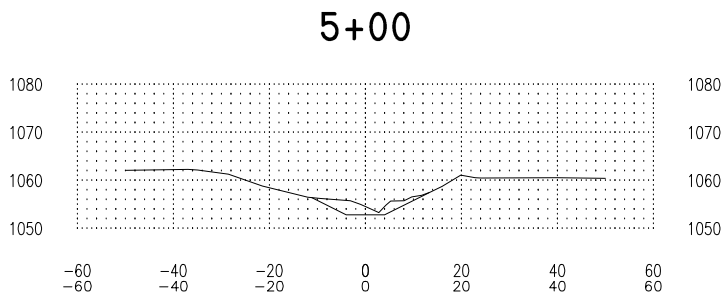
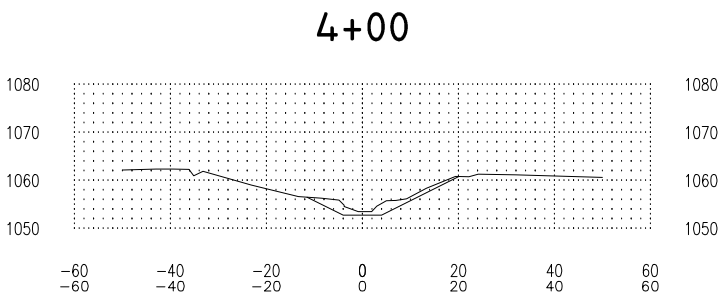
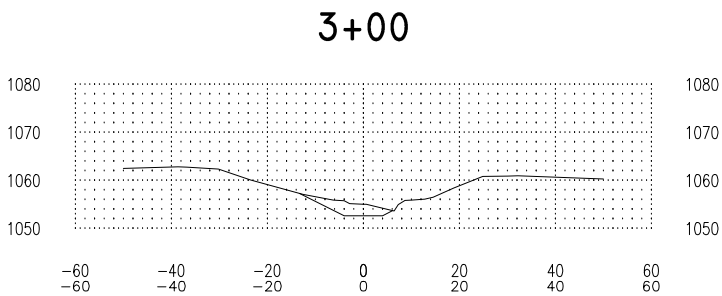
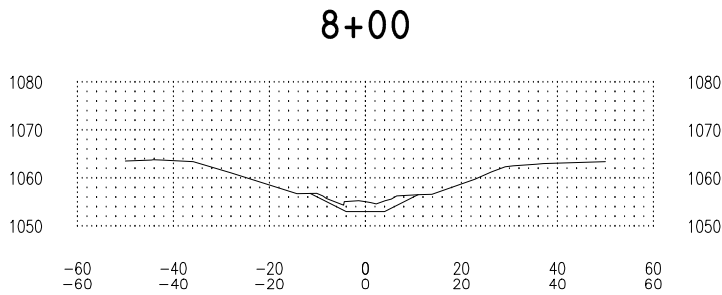
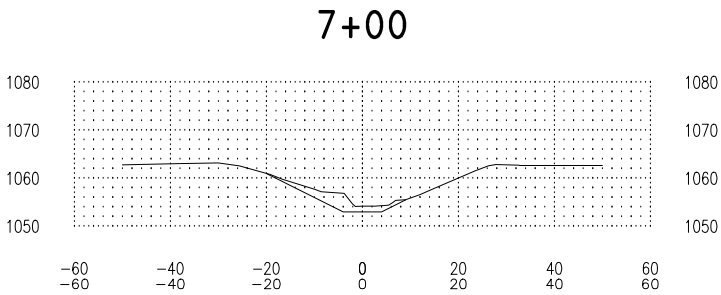
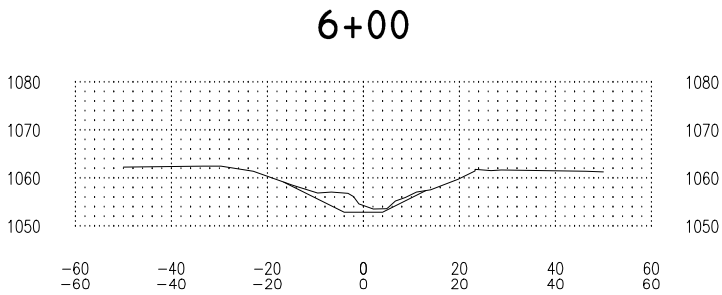
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PLAN AND PROFILE

SHEET

D.11

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PROJECT **STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.01 CROSS SECTIONS
DRAWN BY	NJF/JKF/TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3/17/2015

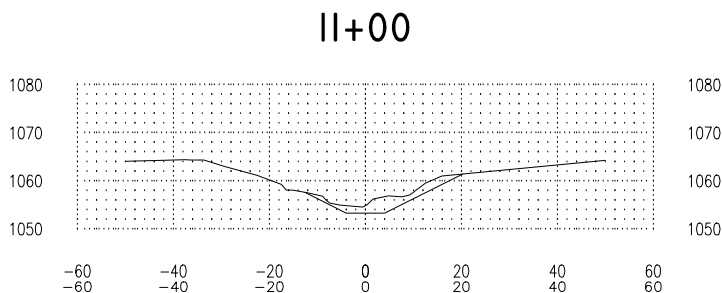
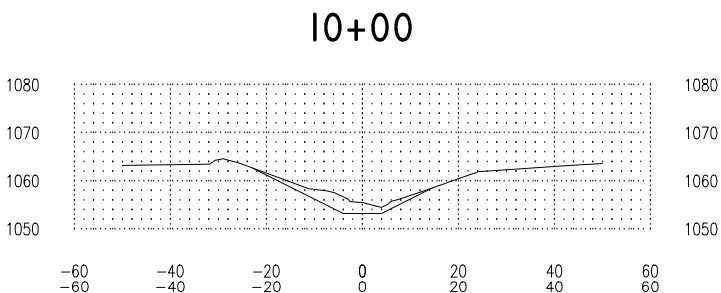
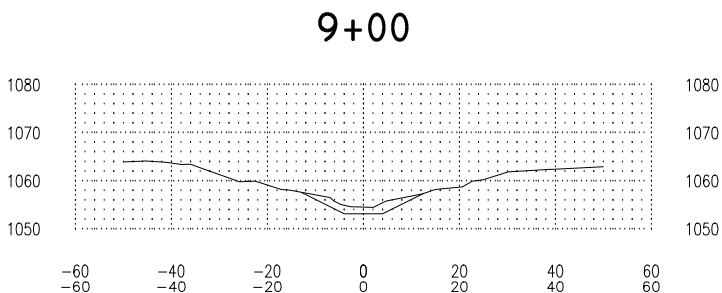
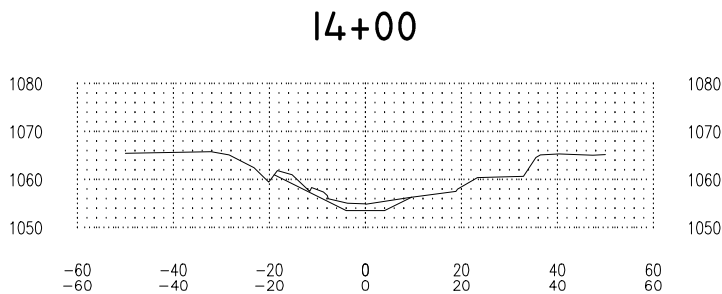
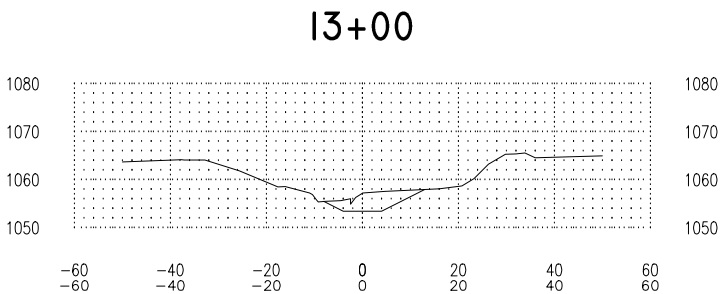
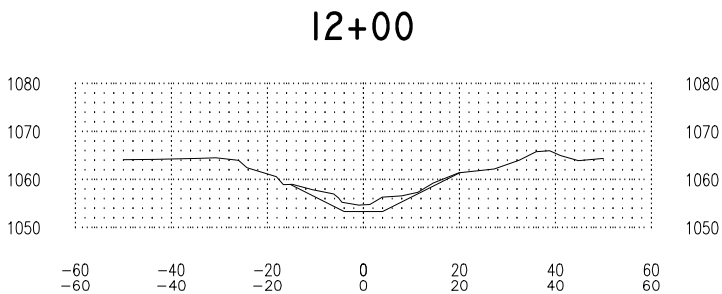
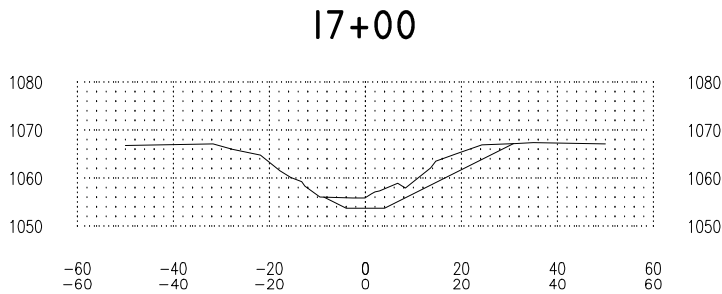
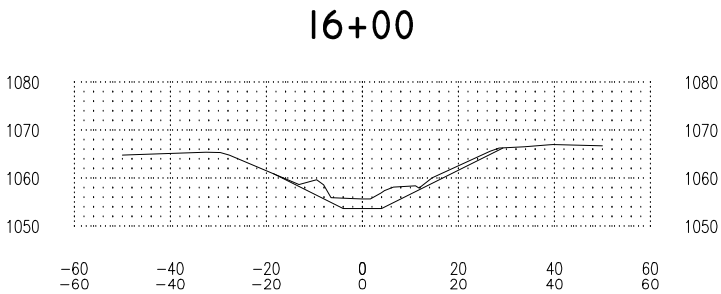
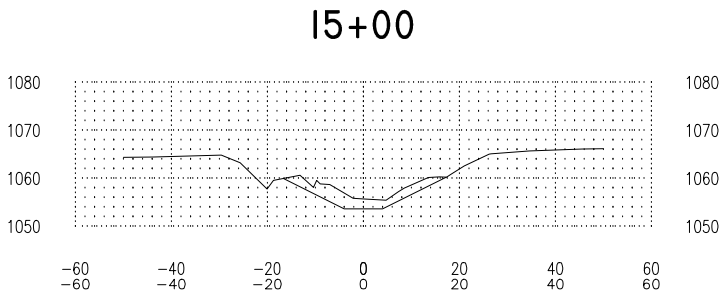
CLIENT PROJECT NO. -

TITLE

CROSS SECTIONS

SHEET **X.01**

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PROJECT **STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

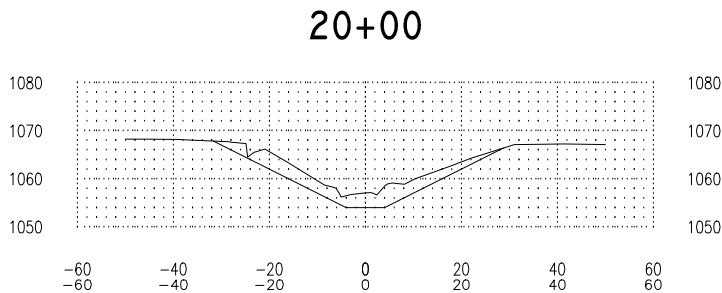
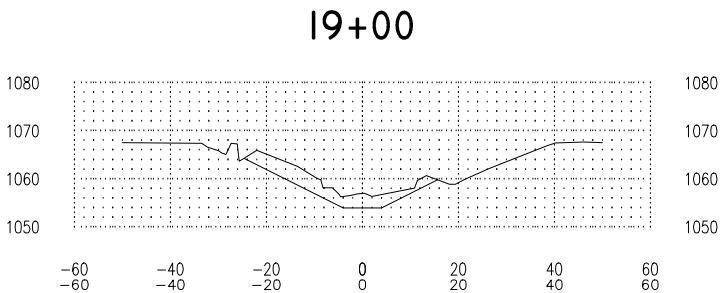
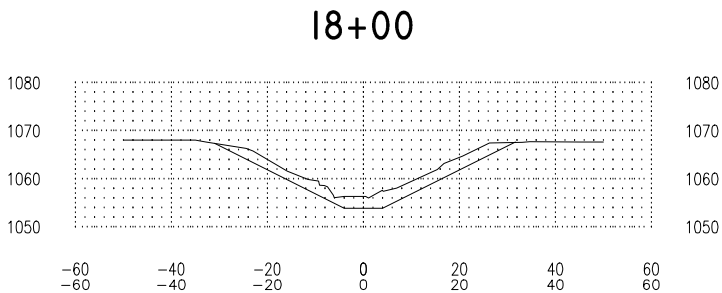
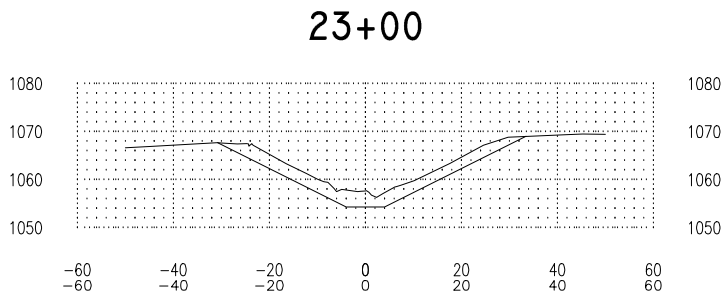
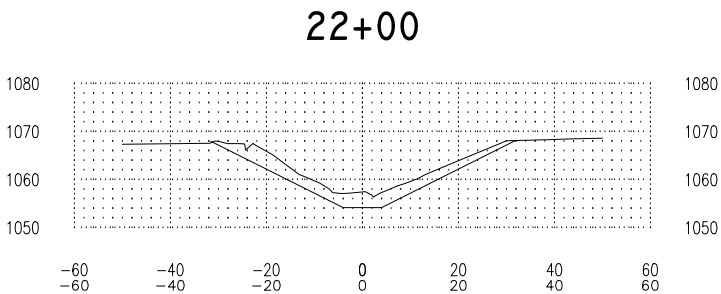
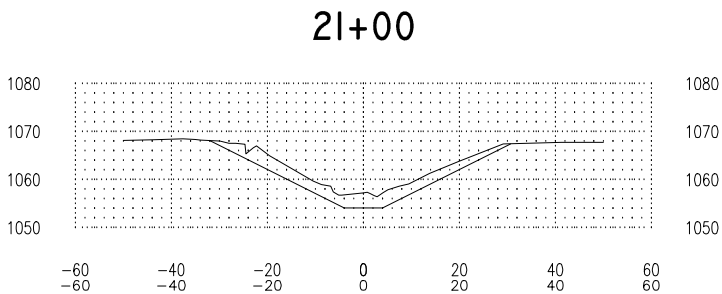
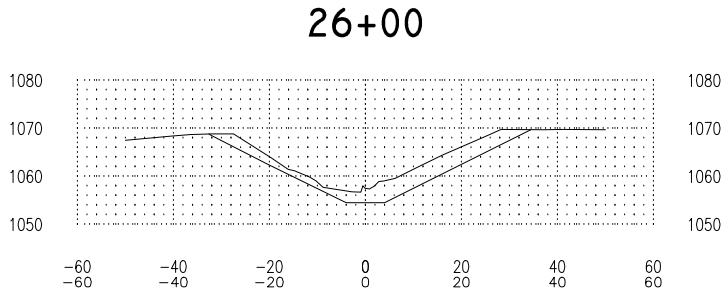
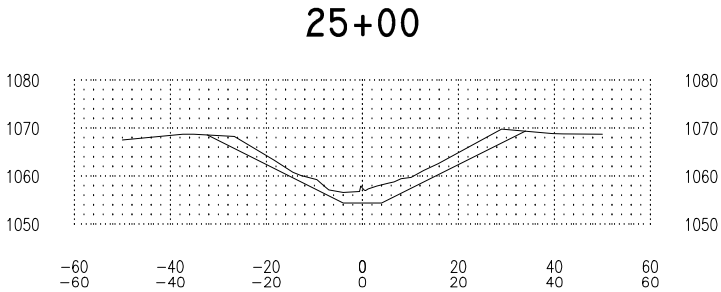
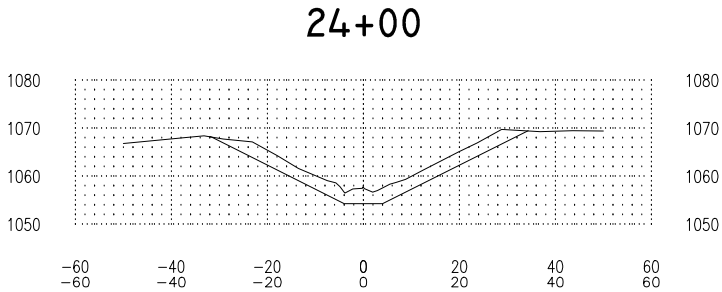
REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.01 CROSS SECTIONS
DRAWN BY	NJF/JKF/TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3/17/2015
CLIENT PROJECT NO.	-

TITLE
CROSS SECTIONS

SHEET
X.02

SAVED DATE: 3/17/2015 FILE PATH: F:\16300\16300-16391\16319\16319 JOINT.DWG #1: STORY AND MARSHALL COUNTY\16319 CIVIL-STRUCT\16319 CIVIL-PRODUCTION DRAWINGS\X.01 CROSS SECTIONS.DWG



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PROJECT **STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.01 CROSS SECTIONS
DRAWN BY	NJF/JKF/TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3/17/2015
CLIENT PROJECT NO.	-

TITLE

CROSS SECTIONS

SHEET **X.03**

SAVED DATE: 3/17/2015 FILE PATH: F:\16300\16300-16399\16319 CIVIL-SURVEY\16319 CIVIL-PRODUCTION DRAWINGS\X.01 CROSS SECTIONS.DWG



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STORY AND MARSHALL COUNTIES
 JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.01 CROSS SECTIONS
DRAWN BY	NJF/JKF/TAC
DESIGNED BY	KLR
REVIEWED BY	KLR/NRF
ISSUE DATE	3/17/2015

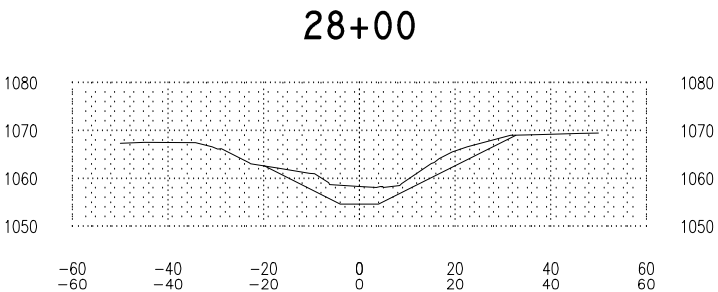
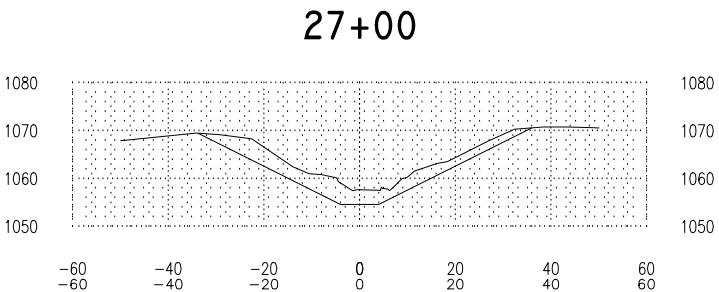
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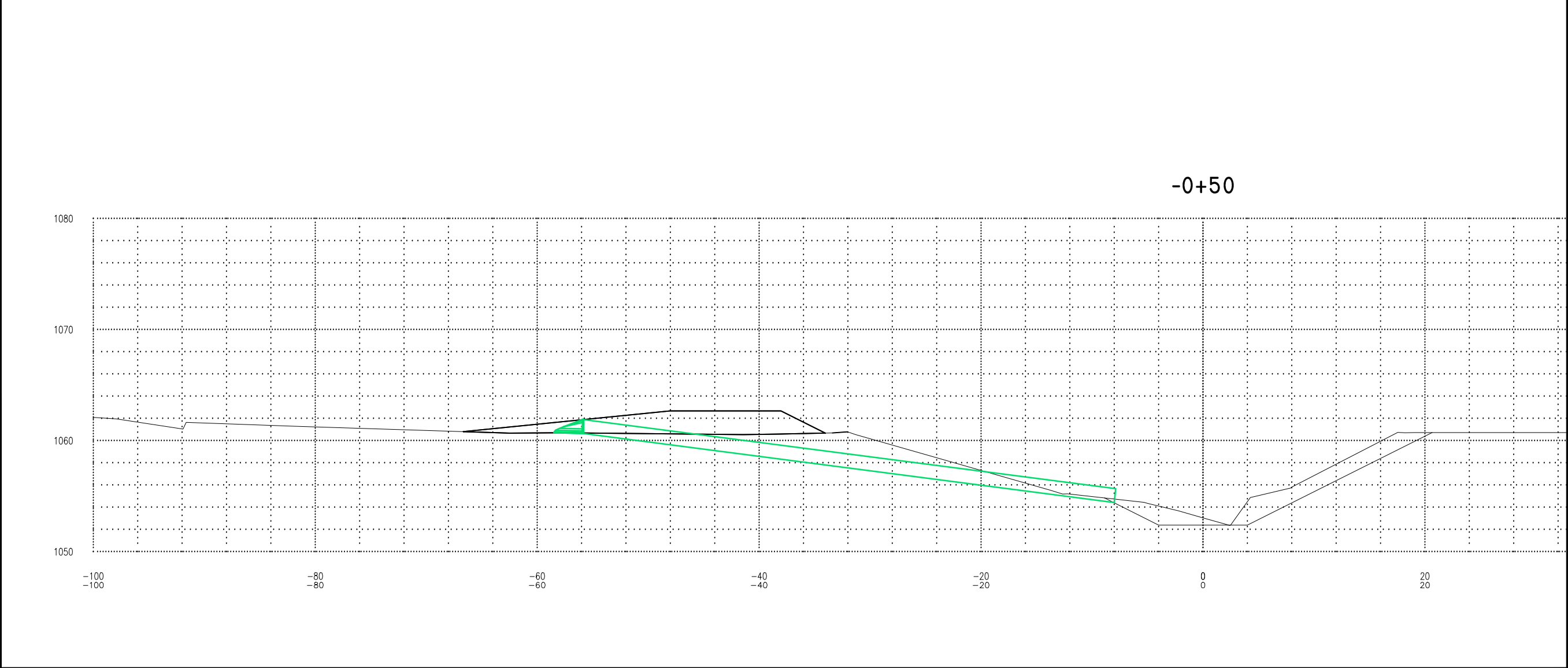
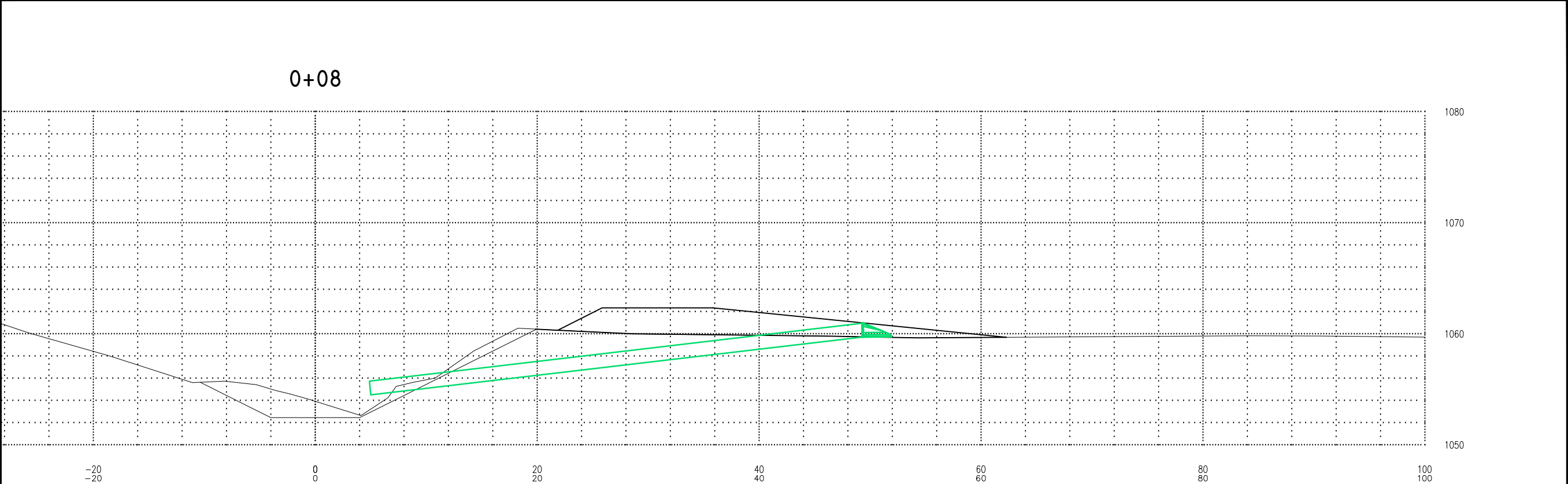
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PROJECT

STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1

STORY AND MARSHALL CO.

IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.02 SURFACE DRAINS
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DESIGNED BY	KLR TAC
REVIEWED BY	KLR NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

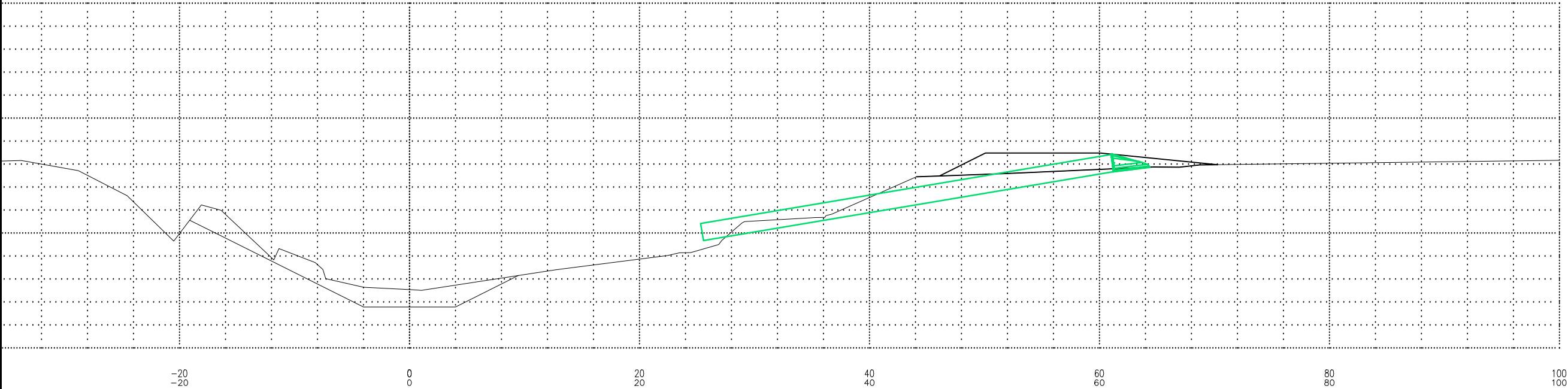
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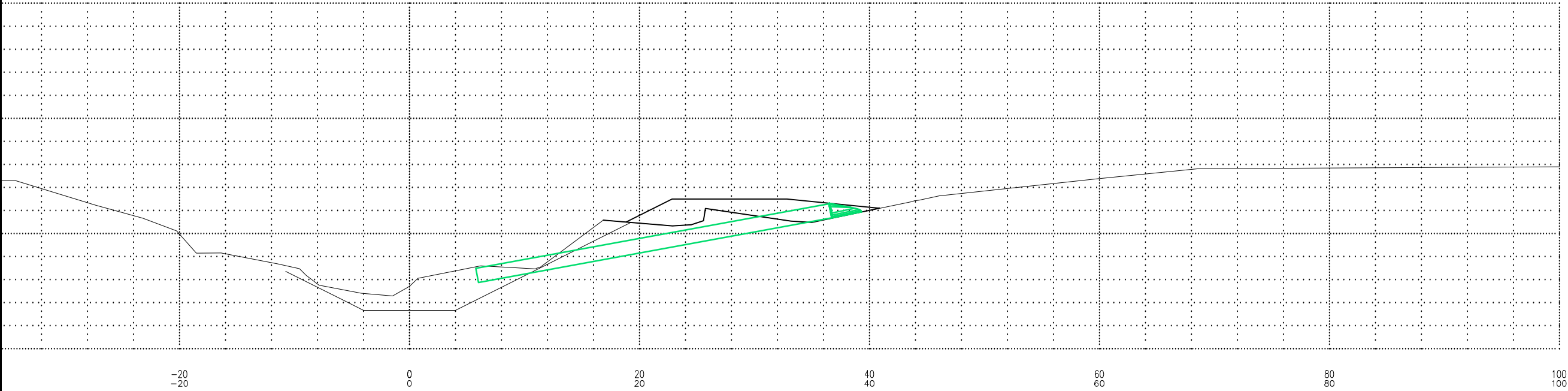
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X.05

14+12



11+26



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PROJECT **STORY AND MARSHALL COUNTIES JOINT DRAINAGE DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.02 SURFACE DRAINS
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REVIEWED BY	KLR NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

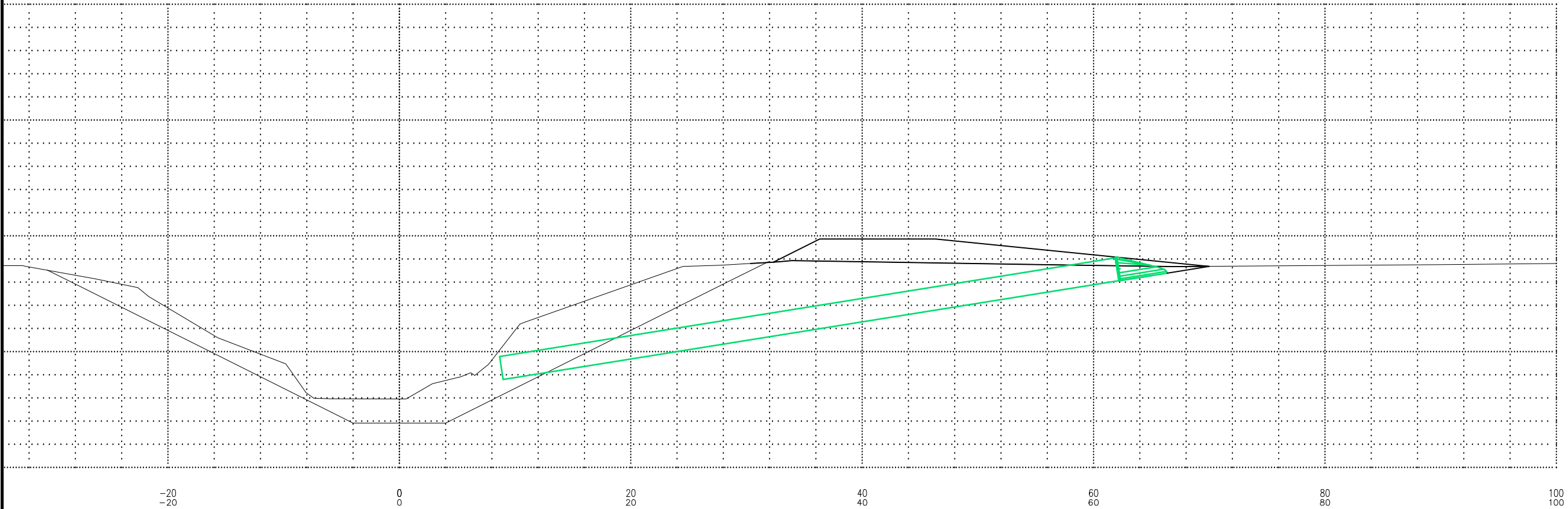
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Surface Drain Cross Sections

19+30



17+51



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PROJECT **STORY AND
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COUNTIES
JOINT DRAINAGE
DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

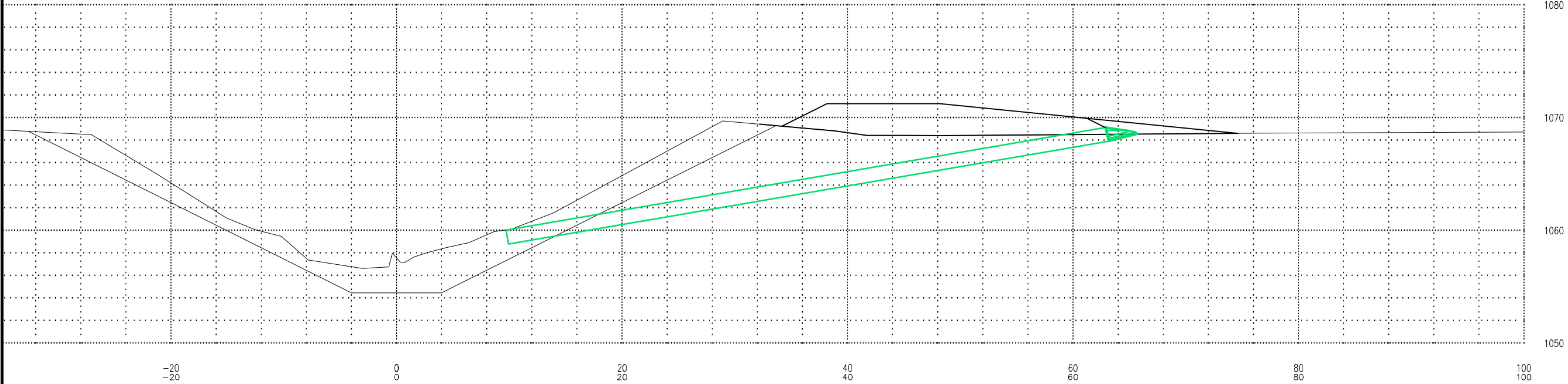
REVISION SCHEDULE		
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PROJECT NO.	13-16319
FILE NAME	X.02 SURFACE DRAINS
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DESIGNED BY	KLR TAC
REVIEWED BY	KLR NRF
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

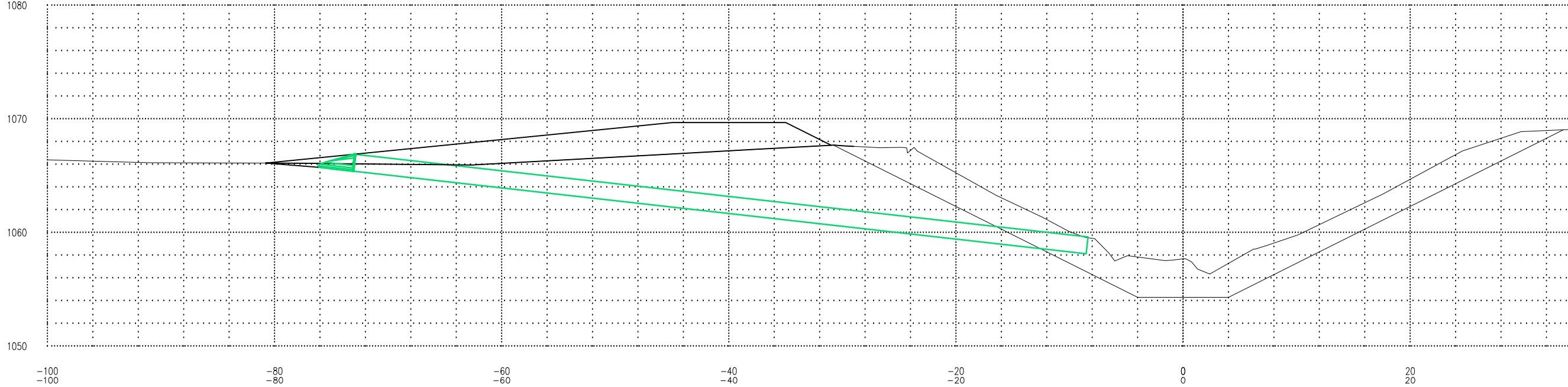
TITLE

**SURFACE DRAIN
CROSS SECTIONS**

25+20



23+00



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PROJECT **STORY AND
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COUNTIES
JOINT DRAINAGE
DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

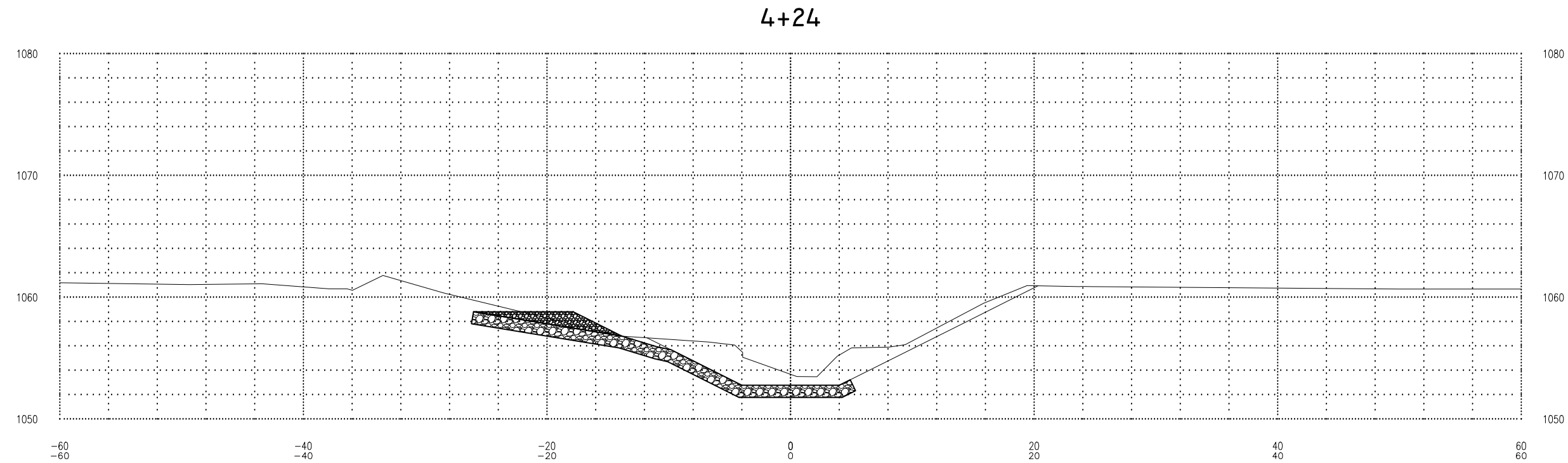
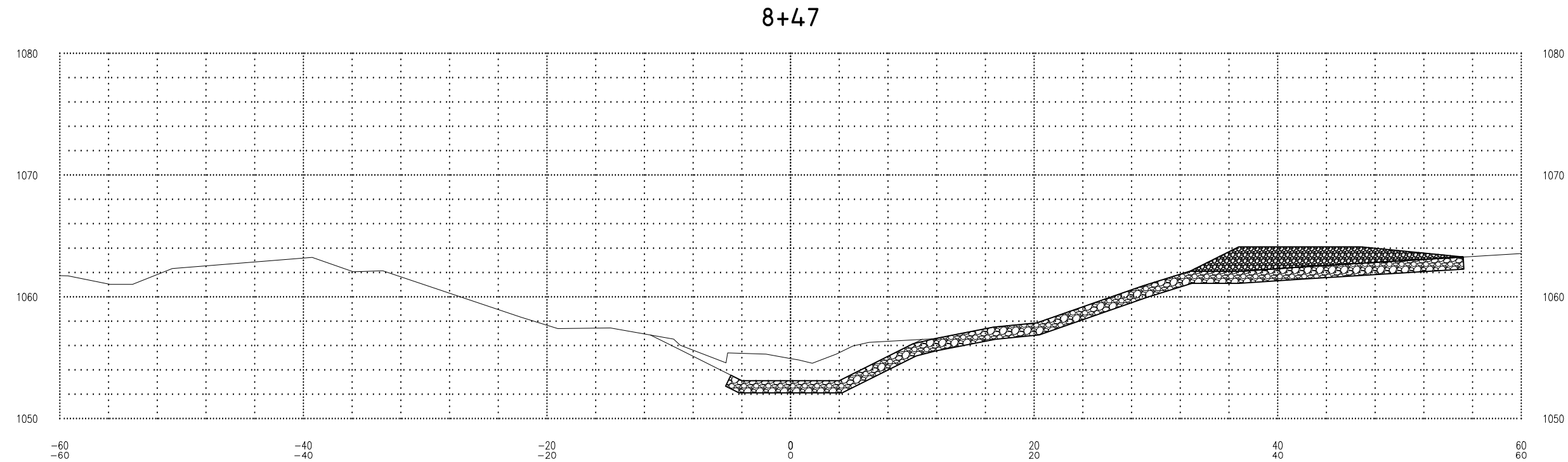
REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.02 SURFACE DRAINS
DRAWN BY	TAC
DESIGNED BY	KLR TAC
REVIEWED BY	KLR NRF
ISSUE DATE	3-18-2015

CLIENT PROJECT NO. -

TITLE

**SURFACE DRAIN
CROSS SECTIONS**



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PROJECT **STORY AND
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COUNTIES
JOINT DRAINAGE
DISTRICT NO. 1**

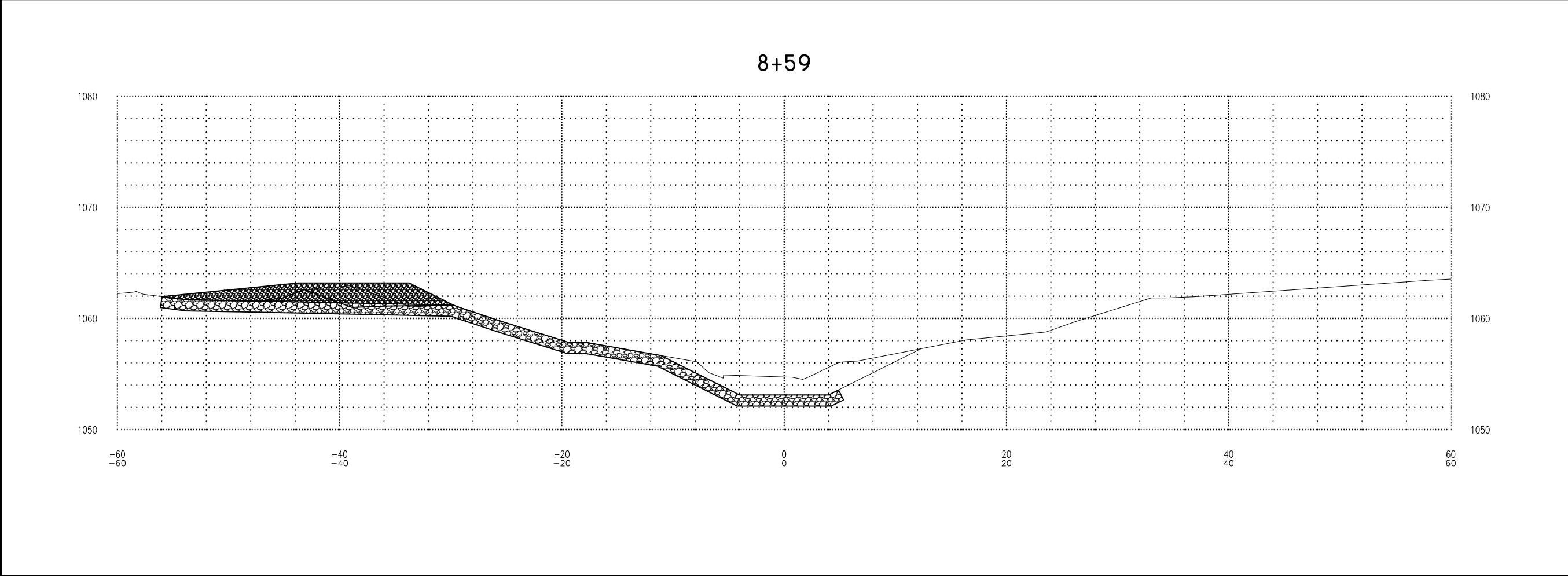
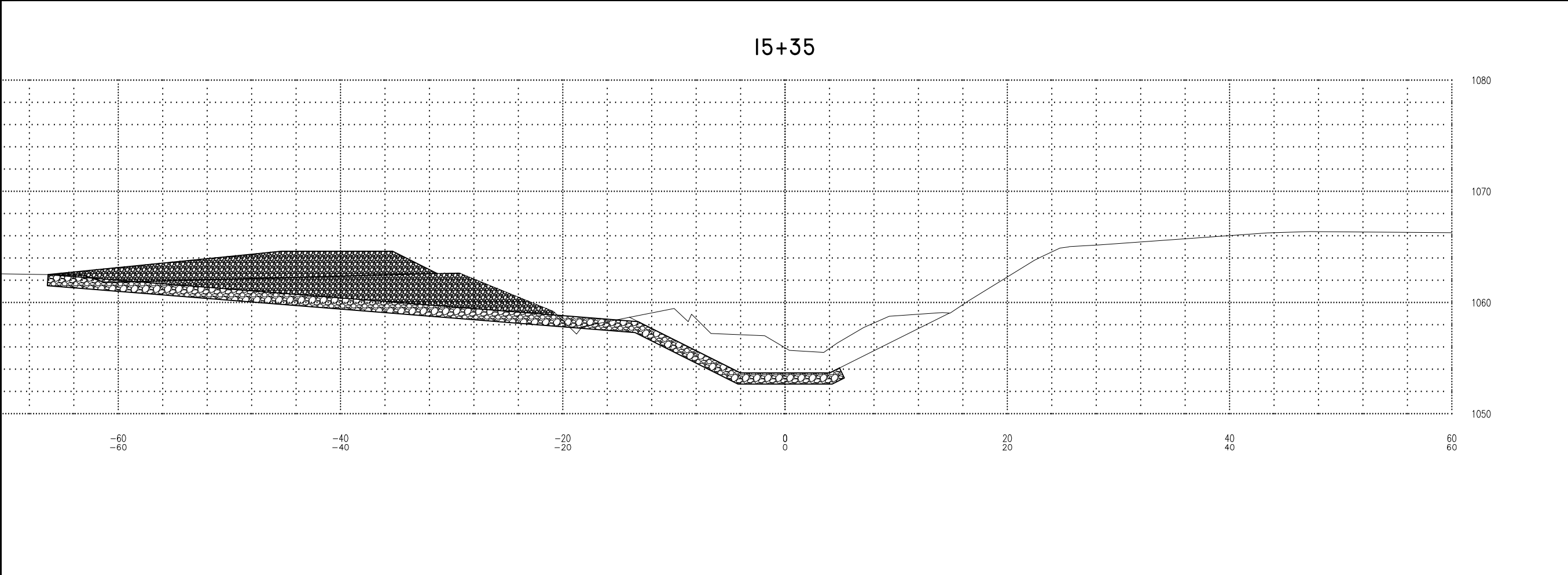
STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.03 ROCK CHUTES
DRAWN BY	-
DESIGNED BY	-
REVIEWED BY	-
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

TITLE

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DISTRICT NO. 1**

STORY AND MARSHALL CO. IOWA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	13-16319
FILE NAME	X.03 ROCK CHUTES
DRAWN BY	-
DESIGNED BY	-
REVIEWED BY	-
ISSUE DATE	3-18-2015
CLIENT PROJECT NO.	-

TITLE

**ROCK CHUTE
CROSS SECTIONS**